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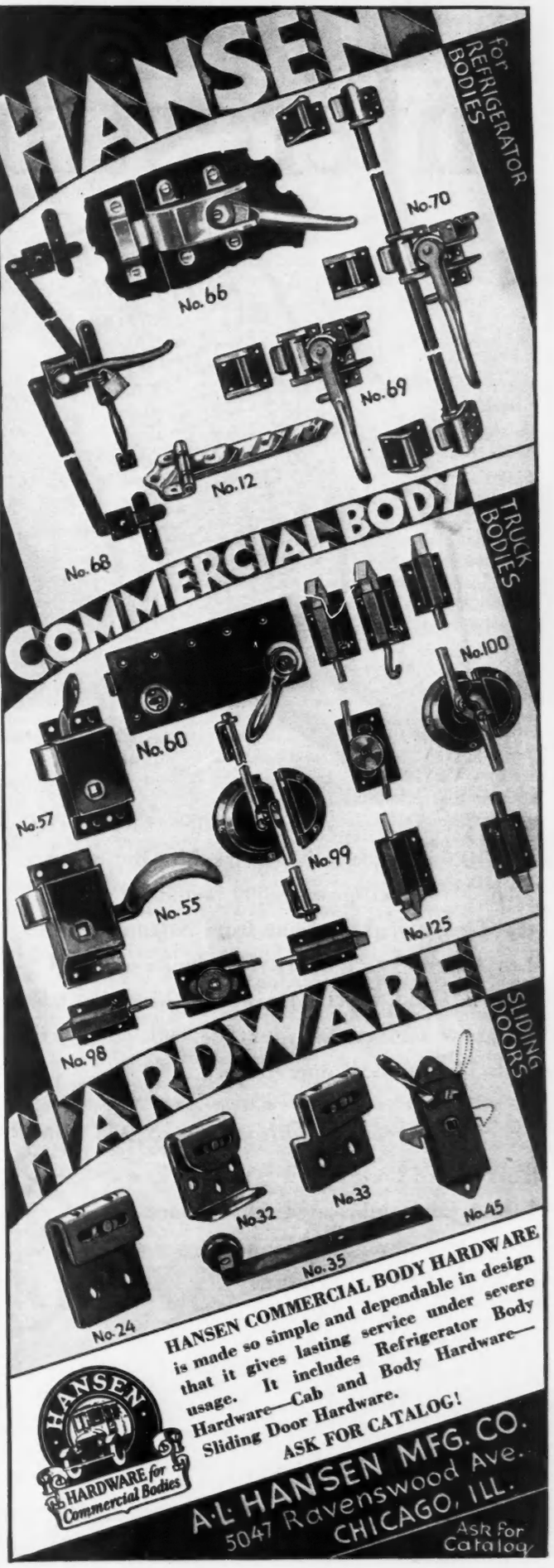


Interesting news of

Mail Liner Zips Across Nation In 11½ Hours
Jack Frye, in New Type of Plane, Makes 1 Stop From Los Angeles to Newark
NC 223Y
300

A record made with Texaco Fuels and Lubricants!

ELEVEN AND A HALF HOURS ACROSS THE NATION in a plane is remarkable. But when a loaded truck with over 4,000 pounds of commercial freight makes a run from Atlantic City to Los Angeles in *71 hours, 12 minutes*—THAT'S NEWS. Good, practical news; the kind that tells you how to increase your fleet efficiency—cut costs in your fleet operations.

Truck in Perfect Condition After 2,945 Miles

This loaded Ford V-8, 1½ ton truck, was fueled and lubricated throughout its strenuous run of 2,945 miles, through heat and cold, sand and snow, exclusively by Texaco. Texaco Service Stations, conveniently located along the route, supplied the Texaco Motor Oil, Texaco Marfak and *Fire-Chief* Gasoline. This National availability of Texaco Products and Texaco Service together with the proved quality and efficient performance of Texaco Fuels and Lubricants, were largely responsible for the success of this run. Engine and truck were in perfect condition at the end of the 2,945 mile trip. High fuel efficiency was maintained and oil consumption was remarkably low. Texaco Fuels and Lubricants are used by many of the country's truck fleets. Lowered maintenance costs, new operating econo-

TEXACO

REG. T. M.

TEXACO

REFINERY TESTED FOR UNIFORMITY . .

The Overload

Odd Items and Comments—Not All Odd—Garaged in This Spot to Entertain, Amuse and / or Amaze You

Capsule Criticism

HOW rail rates came to be mixed in with war profits we can't tell you, but Bernard M. Baruch did have a mouthful to say on the subject of rail rates when he appeared before the President's committee studying legislation to control war profits. He gave it as his opinion that rail rates should be based on "service and efficiency" and not on invested capital. "I am thoroughly opposed," he declared loud enough for railroad security holders everywhere to hear, "to the guaranteeing of interest and dividends on capital unwisely invested."

Some Pay (out) load

THE $4,880,000,000 Work-Relief Fund voted the President by Congress was some load in more ways than one. It's a big load figured in future taxes or present trucks. Statisticians figure that the money, if it had to be transported from here to there as gold, would require 90 10-ton trucks. You'll have to make allowances for the computation because statisticians can't be expected to know that a 10-ton truck isn't the same as a 10-ton payload.

Air---Compressed, Not Hot

THE operating cost of an engine does not necessarily increase with a boost in the number of cylinders. The same goes for air compressors. Exhaustive tests just completed by The DeVilbiss Co. prove that a two-stage service station air compressor produced a pressure of 200 lb. at a lower cost than a single-stage compressor produced 150 lb. The basis for comparison was the output in cubic feet per kilowatt hour. The savings thus afforded offset the higher initial cost of the two-stager.

Turning Signal Outlook

DEVELOPMENTS in passenger cars may force compulsory use of turning signals on trucks. The cause and effect work this way: The new passenger car ventilating systems increase the tendency to drive with windows closed. This makes hand-signaling inconvenient at all times and impossible in an emergency. And hand signals, despite their shortcomings, do contribute to safety. Recognizing this tendency legislators may have a word to say which will hasten adoption of turn-signaling devices as standard equipment. And trucks cannot expect exemption.

Free To Friends

ARE you a bridge player? Whether it's your vice, your pleasure or your wife's cross is all the same to us. We have for you a booklet entitled "Contract Bridge at a Glance." The booklet carries a list price of 25 cents to all but readers of this department. To them it is a free deal. Just ask for it and it's yours.

Truck Calculators

OUR collection of truck performance calculators is perhaps the best in the industry. We have them in popular and in limited editions. They differ in size and in method but all have the common and worthy purpose of trying to help the truck salesman to sell and the fleet operator to buy a truck that will do the job expected of it. The latest to be added to our collection are the Truck Estimator, devised by The Autocar Co., Ardmore, Pa., and the PerformaRule by R. W. Knowles, 15308 Grovewood Ave., Cleveland, Ohio. We haven't the space to describe them, but we do have enough to say that both are available to you, and you and you, too. Address yourself direct to the addresses given.

Tune In on Tune-Up Chart

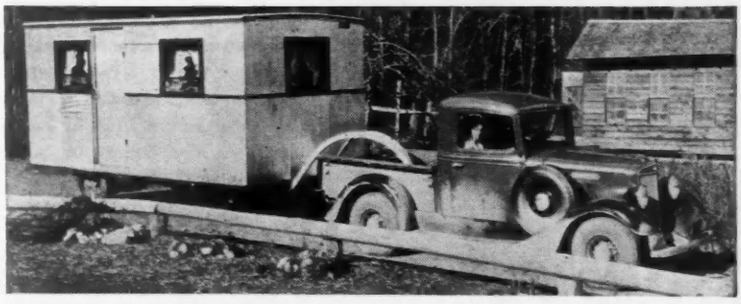
EVERYBODY'S attention is called to the Engine Tune-Up Specifications published on pages 38 and 39 for the first time anywhere. The tabulation represents six months of unremitting toil on our part and heaven knows how much sweat on the part of those men at truck and engine factories who so kindly cooperated with COMMERCIAL CAR JOURNAL. If you have any suggestions for improving the chart, for Pete's and the industry's sake spill them.

Butane-Propane Handbook

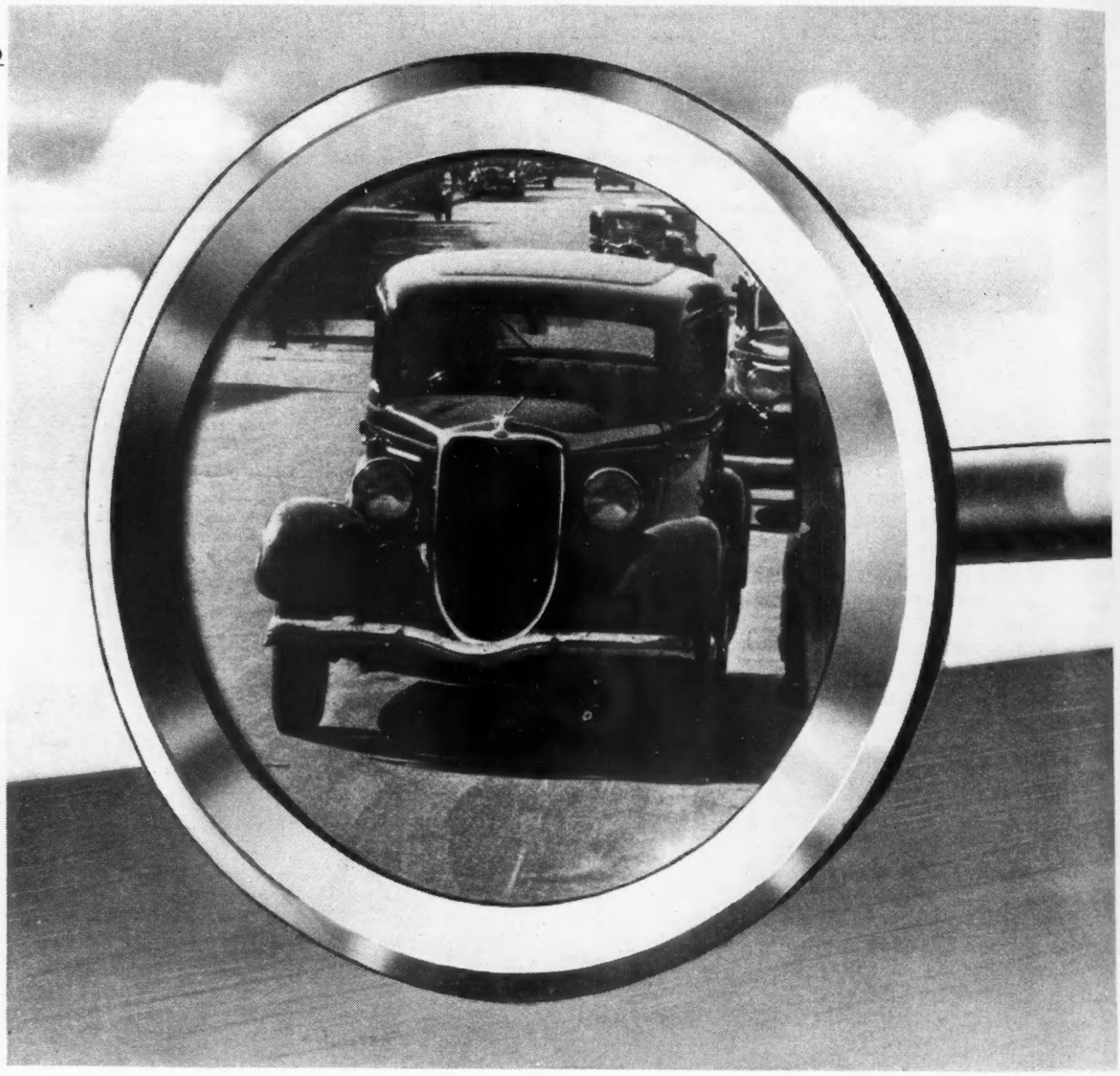
A HANDBOOK of Butane-Propane Gases, covering physical characteristics, manufacture, storage, transportation and important fields of utilization is available to interested engineers and fleet operators. The second edition comprises 400 pages, 122 tables and 233 illustrations. It sells for $5 from the publisher—Western Gas, 810 S. Spring St., Los Angeles.

"Colloiding" All Graphites

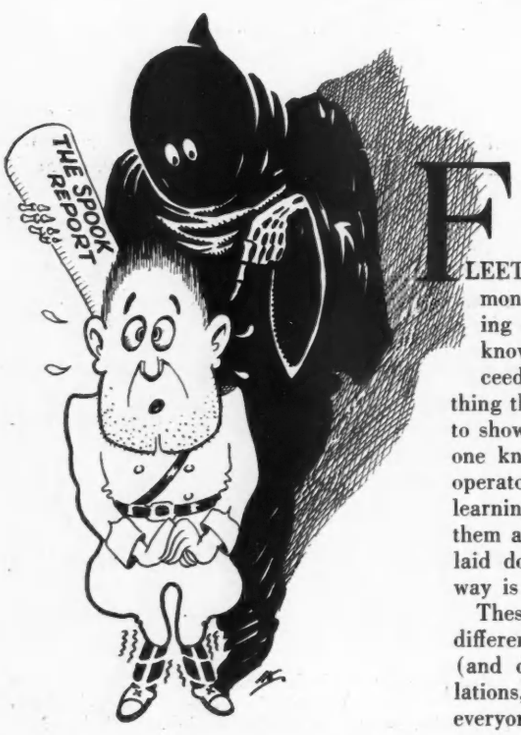
IF you are colloidal-graphite-minded we have two important contributions to the literature on the subject for you—for nothing. One is a technical bulletin dealing with crankcase analyses and deductions relative to sludging, and the other is a 24-page pamphlet entitled "A Scientific Achievement" with documentary evidence. Ask and they shall be given.



Clyde Ternan of Deming, Wash., takes the Missis along when he's out servicing tractors and supervising contracting work. To make things comfortable he takes the house along, too. That makes two supervisors on the job. Who's boss?



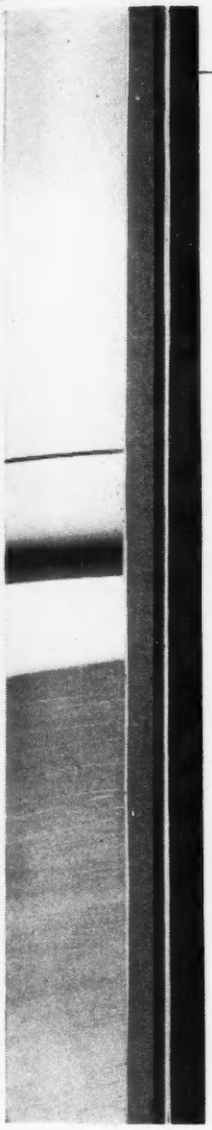
The "spotter" has no distinguishing mark—he may be in the car following just behind a truck



FLEET operators who spend time and money in promoting safety by training drivers are certainly entitled to know how well their efforts are succeeding without waiting for the very thing they seek to prevent—accidents—to show them. There seems to be only one known clear-cut way for the fleet operator to find out if his drivers are learning the things he seeks to teach them and if they are obeying the rules laid down by the management. That way is to employ observers.

These observers may have several different titles in different organizations (and doubtless drivers, guilty of violations, add a few more), but most everyone seems to understand the reference to "spotters." Their work, which is usually referred to as "spotting," consists of traveling the highways observing the behavior of the drivers of the trucks of the company that hires them. In most cases the "spotters" are alert for transgressions of the safety rules and usually they have a set of company rules regarding the efficiency of delivery and the courtesies which the company regards as necessary to company good-will.

Drivers frequently refer to the "spotter" as the "spook" and to the report turned in as the "spook report." This slang probably originated because in most cases the company attempts to keep the identity of the spotter from



A NATIONAL SURVEY AMONG TRUCK FLEETS ON

Spotting Drivers

REVEALS HOW OPERATORS CHECK CONDUCT

Fleetmen Reveal Own Inspectors, Customers, Insurance Agents and Police Are Some of the Sleuths Behind "Spook Reports" on Drivers

HERE are the questions on "spotting drivers" answered by fleet operators in a national survey conducted by Commercial Car Journal:

1. How do you check driver behavior on the road?
2. If you use inspectors, are they authorized to punish violations of your driving rules or do they merely report their findings? What is the procedure?
3. In what way do you prevent the inspector's check from becoming routine so that the drivers will not know when and where to expect the inspector?
4. What penalties do you impose on drivers for violations?
5. Do you have any working agreement with the police or any outside agency for the purpose of a closer check?

becoming known, with the result that the drivers do not know who turns in the report on them.

Good drivers do not fear the "spotter" because he is only an instrument to protect them from themselves, and if they behave in the accepted manner when they are being spotted, the "spotter" turns in a report on them which is evidence to the management that they are good truck drivers. After all the "spotter" must account to someone as to how he spends his time, and if he has no unfavorable reports to turn in he must turn in favorable ones to justify his existence.

Unfortunately there has been some stigma attached to "spotters" and "spotting." This is based on emotion rather than on logic. Railroads, hotels, department stores and many other businesses have found "spotters" necessary not only to keep respect for their rules and regulations but also to provide a basis for promotions. Wherever large groups of employees are forced to work without direct supervision and to meet the public, it is necessary to know how well they are doing their jobs.

IN some trucking organizations there are enough responsible employees traveling the highways to provide a "spotting" system without having a formal "spotting" personnel. Some fleet executives do some personal "spotting" for one another, this process being fostered by cooperative organizations such as associations and safety groups. The safety engineers of insurance companies are on the street a great deal of the time and they frequently turn in reports, good or bad. Some insurance-handling organizations have a formal "spotting" procedure.

COMMERCIAL CAR JOURNAL has conducted a national survey to determine what methods are used by fleets to check the behavior of their drivers, to learn the nature of punishments inflicted for misbehavior, and, in so far as possible, to make known the details of these driver-control processes. The replies quoted on these pages are from fleet operators and are typical in their description of the workings of the department which checks driver behavior on the road.

It might surprise you to learn, after all you have heard about the possibilities of soldiering on political jobs, that the **United States Treasury** Department is interested in having only good truck drivers operate its truck equipment. **W. H. Thies** reports that inspectors, who have no regular route, check the deportment of the Treasury Department drivers. Drivers are reprimanded for their first violation. For the second one they get time off without pay and on being caught in a third violation they are given a chance to seek a new job. Mr. Thies depends entirely upon his own inspectors to report driver conduct to him, having no working agreement with the police or

SPOTTING DRIVERS

any other outside agency of any kind.

Some of our 48 sovereign states have some definite ideas as to how driver behavior should be checked. **C. H. Purcell** is the **State Highway Engineer, State of California, Department of Public Works.** From his office **R. H. Stalnaker, Equipment Engineer,** tells us that the equipment department is a separate and self-supporting subdivision of the Department of Highways, which owns equipment and rents it to the operating divisions. This leaves the direct control of the drivers to another department. While this department does not employ any regular inspectors, inspection of driving methods is carried on in conjunction with other inspections. These inspections are made by the drivers' superiors and the drivers never know when the inspections will happen. For minor infractions drivers are reprimanded, while for serious ones they may be suspended or even dismissed. There is no agreement with the police or any other outside agency for "spotting" drivers.

OF course, after getting this information we could not let the matter rest there so we communicated with **F. F. Green** of the **State of California Highway Commission** and received the following information:

The equipment superintendent and traveling mechanics check the operation of equipment and report their findings to district officials for correction. The superintendent has no fixed route or regular schedule for his inspection trips. All drivers are civil service employees so formal charges must be presented to discipline them with lay-offs without pay or dismissal. No outsiders cooperate in the check.

C. G. Nichols, Executive Deputy Commissioner, State Highway Department, replies for the State of Connecticut. We do not have any inspectors designated as such but the heads of the various bureaus keep a constant and strict check on the operation of vehicles operated by that department. The inspections do not take place at stated intervals but those whose duties involve this sort of work just simply "appear." In case of a minor infraction the driver is admonished but recurring lapses result in reprimand or suspension. If the infraction is an overt act, dismissal may follow. The State Highway Department works very closely with the State Police and Department, Motor Vehicles.

Public utilities do a good job of keeping track of their drivers when they are on the road.

S. B. Shaw, Automotive Engineer, presents the evidence for the **Pacific Gas and Electric Co., San Francisco.** Supervisory employees observe the manner in which drivers operate their vehicles as part of their general duties. They are not authorized to punish violations unless the drivers report directly to them. Otherwise they make known their findings to the division manager. Sometimes drivers are admonished and sometimes lose their driving privileges for violations. Arrangements have been made with the police to report any driver observed to be driving improperly.

E. L. RODMAN is Automotive Engineer for the **New York State Electric and Gas Corp., Binghamton, N. Y.** In this company customer complaints are quite a factor in regulating drivers, the slightest complaint being followed through. In addition the transportation department has a vehicle inspector who also reports on driving. He reports to a superior and the defendant is tried by a court composed of his foreman, the superintendent, himself and two disinterested parties. The inspector does not have a regular schedule so no one knows when to expect him. Penalties take the form of lay-offs without pay or, upon repetition, discharge. There is a close relationship with the police, who aid the company in this work.

The **United Parcel Service, Los Angeles, Cal.,** can represent department stores in this survey in as much as the United Parcel Service is the delivery department of many department stores. No inspectors are employed, the observing being done by executives and salesmen who are on the street most of the time. The drivers never know when or where to expect them. Penalties range from warnings to removal from a driving job. The insurance carrier aids in this spotting service, according to **J. D. Blackstone.**

AFTER the department store drivers, we consider the drivers who get food from where it is to where we want it. **F. F. Wagner, Sales Department,** answers for the **Beech-Nut Packing Co., Canajoharie, N. Y.** He says the company depends upon the drivers' accident record and maintenance costs to indicate the manner in which the drivers conduct themselves. Should careless operation be detected, it is handled with the salesman through the division representative under whose direction the salesman is operating.

Billie Burgan, Hage's Ice Cream Co., San Diego, Cal., says that for the sake of his men he is truly glad not to be able to polish this research apple. Drivers of this company have keys to hotels, restaurants and stores and since they molest nothing, Mr. Burgan thinks it is safe to assume that they can be trusted to respect traffic and safety regulations. He adds that the fleet safety record is the proof.

The Pacific Fruit and Produce Co., Seattle, Wash., so **Phillips Dickinson** tells us, does not maintain any system of checking driver behavior on the road.

A. K. LaMotte, Cushman's Sons, Inc., New York City, feels very strongly about "spotting." He believes that the drivers distrust the boss when he employs "spotters." He tried it years ago and it did not work for him. He says he is able to get a line on his drivers from their reports on accidents and their general efficiency. Loss of regular vacation, vacation without pay and assessment of part of the cost of the accident are penalties.

D. H. ROBERTSON, Automotive Superintendent, Golden State Co., Ltd., San Francisco, Cal., outlines the workings of a four-man board of review, a company court which tries the company drivers for violations irrespective of the legal aspects of the case. Violations are detected from damage to trucks or property and from reports of outsiders.

Lawrence G. Klingbeil tells us that **C. R. Cheney Co., Los Angeles, Cal.,** "spotters" trail the drivers of that company without any regular schedule. They report their findings to superiors. Drivers found guilty are warned, laid off, or discharged. The insurance company most interested aids in the "spotting."

The oil refineries, who depend upon highway use for existence, are doing their share to keep the highways safe and orderly.

L. C. Jones, Assistant Superintendent of Transportation, Gilmore Oil Co., Los Angeles, Cal., outlines a novel program that is worth thinking about. Company inspectors report their findings and the driver is called before a committee which hears

(TURN TO PAGE 46, PLEASE)

Ears to the Ground

INFORMATION WHICH IS INSIDE, ADVANCE OR JUST UNUSUAL

That Small Cummins

There's lots of diesel dope in the air. First there's the public admission of the Cummins Engine Co., that the small diesel mentioned here last month is being put through final tests in actual service. Some long distance runs are planned and expected to prove that the engine will deliver 40 to 50 miles a gallon on ordinary fuel oil and match performance with gasoline jobs of the same size regardless of the number of cylinders employed. We were one cubic inch off on the piston displacement we gave you. We said 331; actually it's 330. It's a six-cylinder job and will deliver 85 "horses."

Packard Primed for Diesels

Then President Macauley, of the Packard company, came out in his annual statement to stockholders with an interesting spiel about Packard's diesel plans. He said that the management had decided to hold its diesel engine project in abeyance while concentrating on the lower-priced Packard. He gave a line on Packard's thinking when he explained that there are some problems in diesel engine large-scale production that are rather difficult but will be worked out in time, and that there is a demand for diesel engines in about 20 different horsepowers but that the cost of tooling plants for their production would be enormous.

Autocar Offers Diesels

The annual report to stockholders was used also by President Page of The Autocar Co., to serve notice that Autocar is now offering diesel-powered trucks "with the reasonable expectation of broadening our market." Four-wheel-drive trucks are also being offered. Autocar is using Waukesha's diesels.

One for the Low-Down

And lastly, an important fuel research organization has just sent a fleet of heavy-duty trucks of various makes out to the Pacific Coast. The idea is to put these units in actual service and make a first-hand study of the relative performance and fuel economy of diesel and gasoline powerplants.

New Chevvy Coming Up

Chevrolet, we understand, is getting ready a new truck model. The public announcement is expected shortly. A lot of fleet operators may consider it the answer to their prayers.

Torque Device for Ford

Plans on the torque-distributor, about which we gave you a report last month, have progressed to the point where units are now being built. By the end of the month The Torque-Distributor Co. expects to be ready to announce its first replacement unit, which will be for Ford trucks. We'll give you complete details of the unit at the proper time.

Have a Hunk of Gunk

You should know something about Tarlene and Gunk. You can probably guess that Tarlene is a tar remover. Well, it is. It removes tar from truck bodies without scrubbing or rubbing. A wipe or a spray and thar goes the tar. But you can't guess what Gunk is. Gunk doesn't come in hunks. It's a fluid, and its tough on grime and grease, but easy on painted surfaces, so that makes it an excellent cleaner. Spray on Gunk solution, rinse with cold water from a hose and the result is magic mixed with gasps of glee for Gunk. (Just between us we're not going to rest until we learn how Gunk got its gname.)

Automatic Brake Catch

A safety device known as an automatic brake catch and release, designed to facilitate the handling of heavy vehicles in hilly districts, has been invented by a resident of the state of Washington, where mountains are hills. The device operates on the service brakes. Any manufacturer wishing to get in touch with the inventor has only to get in touch with us.

A Compound Transmission

This department is informed by the H. S. Watson Co., San Francisco, that it has developed a compound transmission for use on 1934 and 1935 Ford and Chevrolet trucks. It differs radically from other auxiliary transmissions or axles in that it gives both over and under-drive in addition to direct drive. In operation a higher high, a lower low and two extra gears between each standard gear are made available to the truck driver.

The "Two-Way" Truck

As a reminder to you old-timers and a novelty to the young-timers let it be recorded that the Super truck continues to find favor with buyers who require its specialized design. New "two-way" jobs are in operation among coal and oil companies and breweries. The Super is a two-way job in that the steering wheel column stands vertical and there are two seats for the driver, one in the normal position and one directly opposite. The controls are so placed that the driver, by shifting seats, can drive the truck in reverse as if it were going forward. Catch on?

A DeLuxe Filter

DeLuxe Products Corp., has an oil filter which, according to the maker, actually keeps oil clear at all times, with the accent on "all." It is of the refillable cartridge type. We quote the maker: "Sludge never forms in the motor or filter, as the DeLuxe system of filtration removes the sludge-forming properties as rapidly as they are produced." One operator (name on request) has run a filter 27,000 miles, made no oil change during that time, and reports the oil to be as clear as the day it was put in. We can't tell you any more but the maker, like Barkis, is willin'.

Just Say "Gimme"

Federal-Mogul Corp. presents the new discoveries on the cause and cure of oil pumping in a pocket-size "working demonstrator" which also carries a convenient reference table of recommended bearing clearances. If you want one for your pocket, a simple request will bring it to you. You can also have Bear's 1935 Car, Truck and Bus Alinement Specifications Chart. What say?

Liquid Rubber

We have had liquid silk and liquid skin and now we have liquid rubber that can be sprayed or brushed on as a protective coating for truck finishing. Some of its possibilities are for use as a masking coat which can be readily stripped off without leaving a mark. It's excellent, we are told, as an under-coating for decals. When you want to change the decal, just strip off the rubber under coat—the decal comes off with it. No need of repainting. Name of manufacturer on request.

Left—Metal surfaces are rough-sanded for better adhesion. Above—Approved, careful synthetic technique made this beautiful job possible

SOME HELPFUL HINTS ON HOW

Shopmen Solve Synthetic Kinks

AND GET A BEAUTIFUL PAINT JOB

Three More Fleetmen Pool Their Suggestions On How to Get a Lasting Synthetic Enamel Job

BEAUTY is not alone confined to creatures of the gentler (?) sex. It's just as smart for operators to keep their trucks looking spiffy as it is for women to keep their noses powdered. Taking their cue from God's gift to men, fleetmen turn truck beauticians and offer helpful suggestions on how to get a lasting synthetic enamel job. Suggestions covered are:

Synthetic Technique—By PETER WENDELL, Body Builder and Refinisher, Newark, N. J.

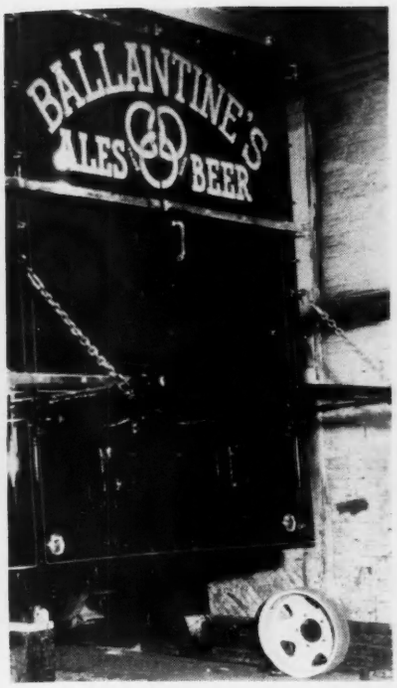
Stop Blushing—By JACK MITCHELL, Paint Department Foreman, Knickerbocker Ice Co., New York City.

Touch-Up Job—By EDWARD CHADWICK, General Supt. of Garage, Little Falls Laundry, Little Falls, N. J.

SYNTHETIC TECHNIQUE

By Peter Wendell, Body Builder and Refinisher, Newark, N. J.

WE have been doing finishing and refinishing jobs in our shops since the year 1883. During this time there is hardly a finish we haven't tried, and we are convinced synthetic enamels are the best solution to the truck and fleet operator's problems. They are quick, simple, and economical to use. They cover nicely, and are about the only finish that has sufficient flexibility to stick on a panel, and at the same time sufficient hardness and durability to take the beating and hard knocks from beer kegs, drivers' shoes, and the



Right—Hold the spray gun about 12 in. from the surface of the body for an even job

other abuses caused by road service.

There is a technique to applying synthetics, though, and until you learn the tricks you may have trouble. We have a special finishing shop which we keep at a fairly uniform temperature. The finish seems to bond better if the truck and enamel are allowed to stand long enough to take on the room temperature. We guard against dust almost as much as we did in the days of slow drying varnish. It is also important to avoid dampness and especially drafts. If you don't you may find it necessary to remove a tacky mess of paint.

Most of the jobs we do are from the metal up. The method we use depends upon the job. Some metal panels can be dry-scraped quite easily with the right tool. The burn-off method will work except for composition panels, or where there is solder to contend with. If you like the water soluble solvents or caustic baths, the main thing we find is you must be absolutely sure to rinse the whole truck down thoroughly and then let it have plenty of time to dry out. A good idea is to take the spray gun and shoot air full pressure along the molding and into crevices. This will take care of both dust and moisture that are in hiding to do damage later.

Standard paint removers are generally satisfactory on most any job, but there is always a wax residue to contend with. If you don't get it off clean with turps or naphtha, either the paint won't take, or if it does, it will very likely remain tacky. Gasoline is less explosive to use for a rubdown, but it is getting more and more difficult to get it without ethyl, coloring matter or a trace of lubricant.

OUR guess is everyone has had his fun with rust. Sometimes it's the mischief to deal with. We always sand and scrape the rusty area clean, and unless you use a chemical wash in addition, the rust is very apt to proceed under the paint and cause peeling over wide areas later. Galvanized metal is responsible for plenty of trouble too. This is because of the oily film. Sign painters have the same trouble from cold weather peeling.

THE way we overcome the problem is by roughing the metal and then etching it with a solution of 8 ounces of either copper acetate or copper sulphate to the gallon of water. Most of the bad peeling jobs that occur can be traced to poor preparation of the surface or the use of poor primers. If the surface is scrupulously clean and a primer sufficiently flexible to withstand expansion and contraction from temperature extremes, or stresses from buckling is

(TURN TO PAGE 52, PLEASE)

Units are completely rebuilt in the shop and returned to stations

HOW UNITED PARCEL SERVICE, WITH 800 UNITS

Servicing a Scattered

By Supplementing Preventive Maintenance of Distant Stations With Unit Replacement from Main Shop Far-Flung Fleet Is Kept Up to Snuff

By HENRY JENNINGS

PLENTY of system for practical purposes but none left over to get your feet tangled in when you are in a hurry. These are the best words we can find to describe the methods which Willard D. Bixby, Manager of Motor Equipment, United Parcel Service, and his staff use to keep track of their operations. Make no mistake, the United Parcel Service keeps plenty of records to make an accurate history for guidance of their present and future thinking but at no time does anyone along the line play stooge to this system. Never, from J. E. McLaughlin, second in command, down to the members of the lubricating crew, is anyone required to do a job (when he knows very well he should be doing something else) just because the system says he should be doing a certain job on a certain date.

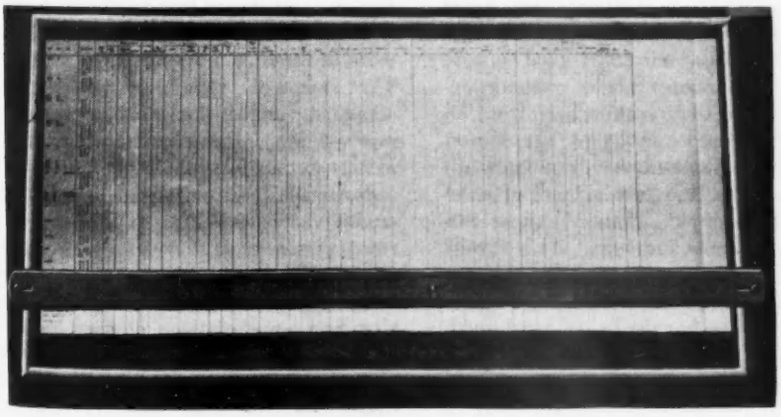
Involved in keeping 1400 cars engaged in delivering department store goods are any number of emergencies, due mainly to the tremendous fluctuation in package volume. When the emergencies arise, extra men are available to take care of unexpected additional work so as not to disrupt the entire system. When the men return to routine after two hours, two days or two weeks of emergency work, they do not face an uphill battle to get their

Here bulk chains are "tailored" into sets

THE United Parcel Service operates a fleet of 1400 cars for delivering department and specialty store goods in New York, Cincinnati and on the West Coast. This consolidated delivery service operates on a daily and a twice daily schedule, and to keep the 1400 cars up to snuff to meet that schedule is no easy job. With United, however, it has become a routine problem, handled efficiently and quickly. Preventive maintenance has enabled the company to operate a scheduled service as well as scheduled deliveries. This article describes the maintenance routine.

AND 16 STATIONS, GOES ABOUT

Fleet of Trucks



Operating costs are kept on this automobile expense analysis chart with sliding straight edge for easier reading (see next page for chart headings)

own work back to schedule, due to this assistance which is rendered by a crew of men who are always available to relieve pressure at any danger point. The system is flexible enough to take care of anything that happens and still it produces information that a number of fleet operators have never been able to compile on their own fleets.

THE New York operation is the largest and since it is typical of the Cincinnati and the coast fleets we will confine this article to the New York fleet. Mr. Bixby is in charge of all motor equipment and we have his word for it that in all locations cars operate on a fairly uniform basis.

The main shop and office are located on East 38th Street, Manhattan. There are other smaller shops at Newark and Long Island City that are equipped to handle body, trim and paint work. To one of these three shops each of the 800 cars operating in the New York area must go when it needs work of this description. Otherwise, every effort is made to keep the cars out of these shops.

Cars are normally garaged in 16 Eastern United Parcel Service stations. These stations are scattered around the territory in a manner designed to keep the delivery cars in or near the community which they serve. Each station is equipped to do ordinary service jobs and there is a full fledged mechanic assigned to day work at each station. The night man in each station comes in the classification of a helper but he must be capable of doing small mechanical jobs without direct supervision and he is charged with the responsibility of lubricating the vehicles.

Once in a while the day mechanic is called upon to do as large a job as grind a set of valves but whenever possible this is avoided, not because the day mechanic is not capable, but because other routine maintenance jobs may call him away from the valves with the result that the car may be in the station, where it produces nothing, for several days. His normal work is inspection. There are about 20 to 25 cars in each station. The mechanic takes these cars in rotation and keeps each one in the shop for one day, during which time he inspects the truck, tunes the engine, adjusts the brakes and performs the preventive mainte-

SERVICING A SCATTERED FLEET OF TRUCKS

Parts are manufactured and salvaged in the blacksmith shop

nance operations. This schedule just about gets him around his own little fleet once a month.

IF the station mechanic runs into an epidemic of bad brakes or if abnormal gasoline or oil consumption develops, indicating that engines require some attention or if his routine work gets ahead of him, an inspector comes to help him and stays to see him through his difficulties. There are two such inspectors who travel from station to station on orders from Mr. McLaughlin, helping out station mechanics and inspecting trucks. The cars in which they travel are equipped with exhaust gas analyzers and complete test benches as well as some other special tools and equipment for making special tests.

This is all splendid routine but perhaps by this time the reader wonders what happens when one of the major units of a vehicle needs overhauling, as units always do when the mileage piles up regardless of whose fleet they are part of or how well they are maintained.

When a unit nears failure in the mechanic's opinion, the mechanic requisitions a rebuilt unit. An inspector looks into the matter and relays his findings to Mr. McLaughlin, who dispatches a service car driven by a mechanic with the rebuilt unit aboard to the station. The mechanic who brings the unit to the station stays and helps the station mechanic install the rebuilt unit and takes the old one back with him. This is done with engines, clutches, transmissions, rear axles and, in some cases, front axles.

To trace these rebuilt units back to their source we will have to return to the 38th Street shop where Mr. McLaughlin spends as much time as he can. The shop is so clean that it hurts to think of some of the fleet shops we have seen in the hinterlands. Motor mechanics work under Silver-Ray lights which give them the best approach to daylight we have seen in a mechanical shop. These lights are supplementary to an ample share of daylight. The ventilation is as good as the light, and it is aided materially by piping exhaust gases to the outside. The mechanics are all uniformed in garments supplied and laundered by the company. (We double-crossed Mr. Bixby to the extent of asking one or two mechanics how they liked their jobs; you know—confidentially. Mr. Bixby need have no fears on that score.)

OVER in one corner is the unit-rebuilding department. After going through a room where they are cleaned with a mixture of cleaning solution and kerosene the old units arrive at this department. They are then mounted in stands and rebuilt by men who specialize not only on certain makes of units but even on certain models of units.

Engine cylinders are reconditioned in this shop with both boring bar and hone finish and, believe it or not, here are two men, Mr. Bixby and Mr. McLaughlin, who are not cocksure which finish is best. They have lived with this problem for years and in weighing the advantages and disadvantages of both methods they sometimes lean one way and sometimes the other. It does your heart good to hear them talk about cylinder reconditioning because they approach it from an analytical angle and they are honest enough to admit they do not know all the answers. It is the subject of some rousing discussions between these two gentlemen, now and then. As it stands now all cylinders are bored and some of them are finish-honed.

Pistons are bought in the semi-finish state and are ground or turned in this department by a competent machinist. Cam ground alloy pistons are used in all trucks with the exception of a few heavy ones. Parts are replaced or repaired to the extent of bringing these rebuilt engines up to new engine standards in every respect. When the engines are finished they are placed on a running-in stand where they operate under observation for about 12 hours. The keepers of records are now in the process of compiling the amount and description of all the work done on engines after they have been placed on the running-in stand. When this information is available in concise form Mr. Bixby and Mr. McLaughlin will go into executive session and decide whether or not the running-in process is worth its salt. It may be kept intact. The time may be cut or the whole operation be abandoned, no one can tell now. It all depends upon what the records disclose.

ALL overhauled engines are painted with aluminum paint and if you are a station mechanic you had better keep it clean after the engine finds its ultimate destination in one of your trucks. The engine is rebuilt to new-engine standards and it looks as good as a new engine. Preventive maintenance at the station does the rest.

Now that the itinerary of a worn-out engine has been traced through its rejuvenation process and back to work again we can go on to the other units. Some of the clutches are rebuilt in the shop and some of them go back to the manufacturer for rebuilding. There is a fine balance between the time required and the cost that determines who will do the rebuilding. Transmissions and axles are rebuilt in

Bodies are especially designed, built and repaired here

this department without exception.

Next is the body shop. All of the bodies you see on United Parcel Service trucks are especially designed and built for the company. Some are built in the company shops but most large orders are handled by outside concerns. The company has developed several new ideas in body design which make it possible to carry a few more packages in a body of no greater overall dimensions than the older models.

It is impossible to tell how many men are engaged in making and maintaining bodies because part of the United Parcel Service contract with department store customers is the alteration, erection and maintenance of certain delivery department fixtures and such of this work as falls into the class of wood-working is done by the body department. The shop is equipped with the latest designs in power saws, planers and shapers, and even with our limited knowledge of wood-working we can vouch for the efficiency of the men who operate this equipment.

THE blacksmith shop presents the same problem to the person who tries to sort out and classify the men who work in it. Some of them vary their automotive work with fashioning delivery department gadgets. However, it is safe to say that the body iron is bought in bulk and manufactured into usable shapes in this shop. Metal shelves and bins used by the company for any reason are made in this shop. Arc welding is used to a large extent instead of bolts and rivets. Sometimes as many as three arc welders are busy simultaneously.

Parts, such as spring hangers, frame horns, etc., are salvaged with the aid of either acetylene or electric welding, and while some experimenting has been done with the salvage of universal joint parts and other parts of a more delicate nature it has not grown to a production basis. For the most part the work could be done in the blacksmith shop but the experimenting proved that the salvaged part would stand the company more money than the cost of a new one.

Painting is a relatively simple operation in this company for the reason that the company has stuck to one color for all of its equipment and it does not go in for fancy lettering or panel designs. The color they stick to is a Pullman brown, which, Mr. McLaughlin says, just sort of grew up with the company. There is no scientific reason for its adoption. It is a durable color and it probably shows dirt as little as any color they could select. Also it combines well with gold lettering and emblems.

Cars get into the paint shop in the same manner that they get new units—because some individual in authority thinks they need attention and not because any inflexible schedule sets a time for their reappearance at the painter's front door. Most of the cars, however, are varnished every six to eight months, as it is the policy of the company to keep all units looking like new.

Tires and batteries get branded before they ever get placed on a car. Tire repairs and battery work are done in the 38th Street shop. About one-third of the tires are fit for retreading at the end of their original mileage and those that are retreaded, the records show, perform about as good as new ones.

SKID chains are bought in bulk and not in sets. The "tailoring" is done on a steel slab. Markings for all sizes of tire chains required by the fleet are laid out on this slab. Marking is by means of holes in which steel pins are fitted. The pins hold the chain in position and show the chain maker the proper length and width without individual measuring. One man has made 25 sets of chains in one day on this slab.

(TURN TO PAGE 90, PLEASE)

AUTOMOBILE EXPENSE ANALYSIS CHART (PICTURE ON PAGE 17)

COLUMN NO.	HEADING
1	Make, Model and Type
2	Mileage Group
3	Number of Cars
	NUMBER OF DAYS IN
4	Paint Shop
5	Mechanical Shop
6	Reserve
7	Service
8	Number of Road Calls
	TOTAL
9	Miles
10	Gallons of Gas
11	Quarts of Oil
	AVERAGE MILES PER
12	Gallon of Gas
13	Quart of Oil
14	Car Day
15	Average Number of Car Days Per Road Call
	EXPENSE
16	Gasoline or Electrical Current
17	Oil
18	Tires
19	Road Call Travel Time
20	Chassis Repairs
21	Body Repairs
22	Alterations
23	Wrecks
24	Painting
25	Depreciation
26	Total Direct Expense
	EXPENSE PER MILE
27	Gasoline
28	Oil
29	Tires
30	Chassis Repairs
31	Body Repairs
32	Depreciation
33	Repairs and Depreciation
34	All Other
35	Total
	EXPENSE PER CAR DAY
36	Gasoline
37	Oil
38	Chassis Repairs
39	Body Repairs
40	Painting
41	Wrecks
42	Depreciation
43	Repairs and Depreciation
44	All Other
45	Total

Note—All columns except Nos. 1 and 2 are divided in half in order to show comparative figures for current and preceding year.

We Farmed Out Truck Repairs

AND SOWED THE SEEDS OF ECONOMY

Which Cut Per-Mile Costs In Half and Helped to Save a Million Dollars In Operation

By **JAMES C. BENNETT,** Manager, Automotive Department, Associated Oil Co., San Francisco, Cal.

THERE are two widely divergent conceptions of the meaning of the term "farming out" repair work and what it embraces. The one most commonly held by men in charge of or connected with the operation of large truck fleets is, I believe, that the owner permits his vehicles to continue in service so long as they will do so without breaking down and when something definitely wrong develops, he orders them to a repair shop.

My own interpretation of "farming out" is entirely different. The Associated Oil company believes in sending the work to outside, or contract, shops. But we supervise repairs, direct the regular maintenance program and dictate just what and when work shall be done to keep trucks in first-class condition.

One of the main objections to the maintenance of company shops for the conduct of all repair and upkeep work is the excessive overhead expense entailed in maintaining a sufficient force during slack periods so that mechanics will be on hand for the occasional peak periods. My observations in other shops, where a full force was maintained for all repair work, indicated that the men at the head of those shops were constantly trying to find work for their mechanics during slack periods.

Under our former system each department attended to its own repair work. This sometimes led to a duplication of

IN 1927 the Associated Oil Co., San Francisco, decided on a reversal of its policy regarding the maintenance of its truck fleet. A single automotive department was established to maintain all Associated equipment operated on the Pacific Coast. James C. Bennett was named to head the department, without instructions on how to run it, except that a saving in the cost of operation and maintenance was expected. He inaugurated changes with the following results:

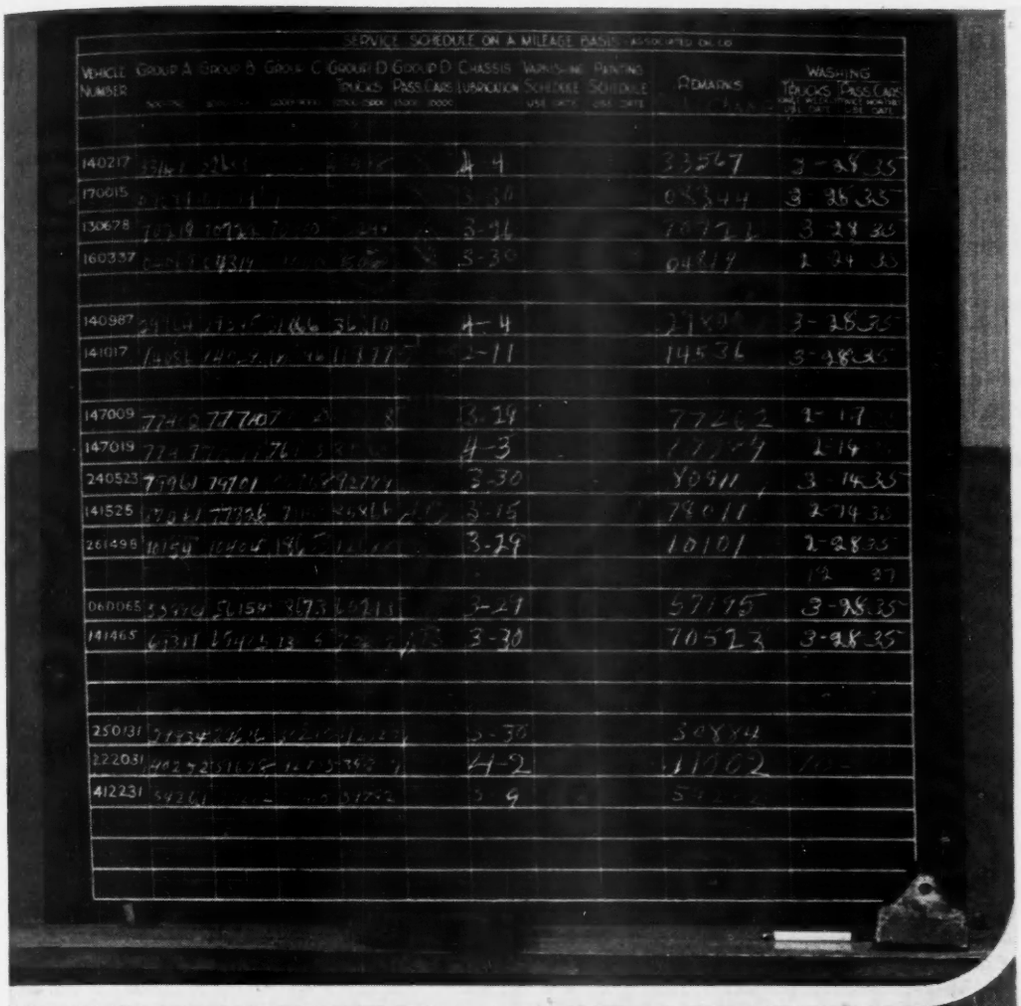
Some 1384 pieces of equipment were reduced in number to 680 units. About 240 units were turned over to salesmen to be operated on specified allowances. An investment in automotive equipment of $3,500,000 was thus cut to $2,225,000. Investment in shops and shop equipment was cut $200,000. Expense of operating and maintaining the fleet was cut from $1,796,000 to $761,000 for an annual saving of more than $1,000,000! The total automotive expense per mile in 1928 was 15.48 cents. In 1934 it had been cut to 7.94 cents per mile.

Mr. Bennett's profitable program features four points most conducive to economy and efficiency of operation and maintenance. They are:

1. Farming out repair and maintenance work.
2. Intensifying the use of the equipment.
3. A plan of replacement or modernization of equipment.
4. Investment control.

In this article Mr. Bennett gives his ideas and experiences relating to "farming out" maintenance work.

James C. Bennett . . . he saved a million



Above—One of the Associated Oil Co.'s fuel oil trucks undergoing a thorough inspection. Top—The maintenance chart gives a complete service analysis on a mileage basis; tells what and when the last servicing was done

effort, in the establishment of shops in closer proximity than actual need demanded. In many places we had such a small amount of automotive equipment that it was manifestly unsound economically to attempt to maintain a special repair shop for that particular locality. So, to take care of that situation, we had what were called "traveling mechanics," who made regular periodical visits to each station where repair facilities were not otherwise available, or who could be sent for in case of special need. These traveling mechanics fitted very well into our new program, as I shall explain later.

In putting our new "farming out" program into effect I determined to follow the example set by the California State Automobile Association in choosing shops to recommend for its members' patronage. The association investigated the efficiency and reliability of repair men in every city and town in the state for this purpose. I traveled through the territory in which we operate and personally interviewed the owners of the shops I had selected, or else had our representatives in the places concerned, do so. We gave them a printed schedule of what we wanted; at every 500 miles of travel by a truck certain jobs were to be done; at every 1200 miles certain other jobs; at every 9000 miles still other work and at every 15,000 miles one special task, which was a thorough internal inspection. We laid this schedule before repair men and asked what rate per hour they would make for the labor involved.

They named their own rates, usually the commercial rate, and if it was reasonable we accepted it. We did not haggle over terms, for we considered it far more vital to the success of our plan to have a satisfied, dependable workman under contract to us than to save a few cents in the rate.

(Continued on Next Page)

WE FARMED OUT TRUCK REPAIRS

"Farming" out repairs cut Associated's cost of keeping this heavy equipment rolling

We said to the repair men under contract: "We are leaving with you the list of things to be done to these trucks and the time that is to elapse in intervals. We do not expect to remind you of these things. You must keep watch of the trucks and their mileage and yourself see that they receive proper attention. We require that a certain amount of work be done on these trucks. It is up to you.

"Also, most of this work you will have to do at night and on Sundays. When a truck is laid up for a short time, we will notify you, so that you may have time to work on it, but otherwise you must do your work when the truck is idle."

Most of the repair men accepted these conditions unquestioningly. A few demurred, but none refused the contract on that account and now everybody seems to be perfectly satisfied.

In order to check up on this repair work we have "traveling inspectors" make periodic visits to repair shops. These inspectors were formerly "traveling mechanics" who visited stations to make truck repairs where it was uneconomical to maintain repair shops. Traveling inspectors are held responsible for the inspection of jobs and the quality of work performed. They are allowed to sanction extra repairs up to $75. Above this amount, the job must be referred to the main office for approval.

WITH the inauguration of the new plan, we aimed to eliminate our central repair shops and such mechanics as were superfluous. Some of these men were absorbed by the "contract shops," of which there are 100.

We still maintain some 15 to 20 small maintenance shops in isolated locations or where there are sufficient vehicles to keep one or more men fully occupied. To take care of "peak load" work in the few shops we operate, foremen are permitted to "farm out" certain repairs. Thus the mechanical force is only what is needed during normal repair periods.

Since our previous system of maintenance did not parallel our present one, it was almost impossible to make comparisons as to costs, so that I was handicapped somewhat at the outset in proving my case. Yet I realized from the beginning that if the amount expended for labor under the new system did not exceed or was less than our previous shop payrolls, plus the overhead expense of those shops, I was not losing anything, or, in case of a lower amount, I was saving something. There never has been a time since the present plan was inaugurated when our expenditure has not been as low or lower than previously. Neither does this comparison take into account the reduced investment in automotive equipment, buildings, etc., possible with the new program.

To elaborate slightly on my original premise at the beginning of this article as to the two divergent views on "farming out" repair work, I consider that the essential difference in the two views is as follows:

The most widespread conception of such a practice is the turning over of all repairs to an outside mechanic or shop, such mechanic to be the sole arbiter as to what the truck or other vehicle needs and to apply such remedies as he thinks are required, without advice or direction.

Under our method we retain absolute control and authority in determining what shall be done to a piece of equipment, when it shall be done and how it shall be cared for in the interim.

I HAVE explained how we provide for periodic upkeep to be administered by the mechanics under contract. But we go much further than that. We maintain complete records in our office of all work done on a truck. This record tells what has been done, when, the number of hours of work spent on it, the time required for each operation, every new part installed, the cost of every separate item of repair, the exact length of time in service and everything else pertaining to the truck's use. Thus we are able to determine the necessity for repairs or replacement of parts.

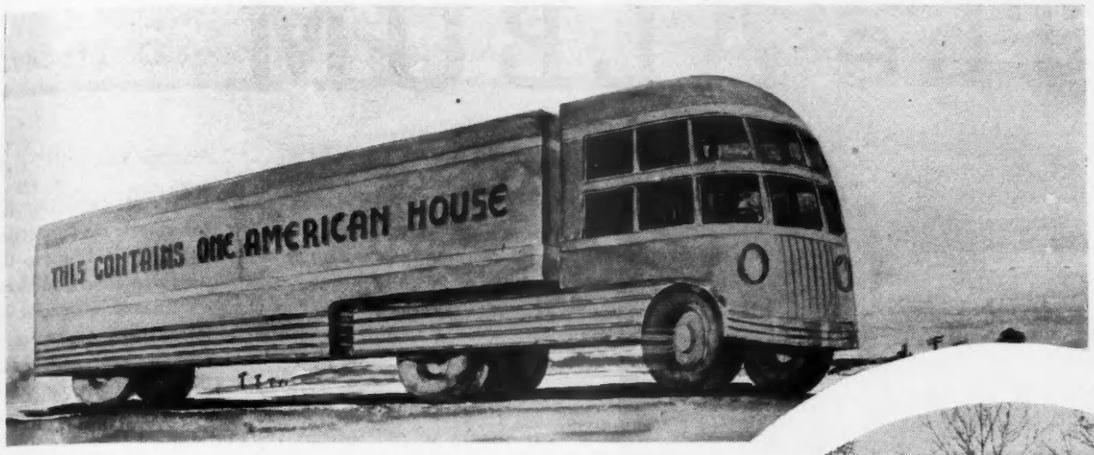
If the traveling mechanic, for example, recommends a part replacement or an elaborate overhaul job in excess of the sum he is permitted to spend without special authority, we refer at once to our records. Perhaps we note that particular job was done once before and so comparatively recently that it should not be required so soon again. Then we ask the contract garage man for an explanation and go into the matter thoroughly before reaching a decision. Perhaps our records show that the vehicle has gone so many miles that the proposed repair would not pay, since it is too near the time for discarding the truck.

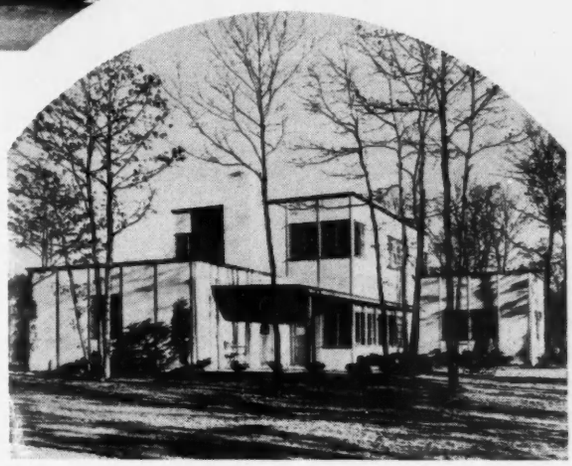
A FEW figures will give a better idea of the results we have been getting. Using 1928 as a basis, the volume of products delivered by trucks would be represented by 100. This gradually increased until in 1931 the figure was 125 and then gradually fell off until it was 99.5 in 1934, practically the same as in 1928. Yet the number of vehicles being operated has gradually decreased until now there are 680, as compared with more than 1300 in operation at the beginning of 1928.

In 1928 the average unit delivery cost was represented by 1.0. In 1934 that cost was 0.5, or just half of the former amount.

The total automotive expense per mile in 1928 was 15.48 cents. In 1934 it was 7.94 cents, another reduction of approximately one-half.

I could cite various other figures and tables, but I think I have proved my point—that "farming out" automotive work, coupled with sound business policy and conduct, pays and pays.





Above—Specially designed semi-trailer for delivering Motohomes (see picture of the nine-room two-story model on the right) has a double-decker cab with sleeping quarters for truck crew in upper deck

New Homes Come Packed in Trucks

Pre-Fabricated, Modern Motohomes Are Delivered to John Public's Lot in Trailer Bodies Specially Designed to Hold Them

By STANLEY GERSTIN

THE millennium of American home-building has arrived—on a motor truck!

A huge, modern, semi-trailer unit roars over the highway. Scientifically stacked away in the trailer's van body is one complete American house. Three men are in the double-decker cab. They have been driving many hours and are now nearing their destination. They got their sleep and rest in the bunks built in the upper deck of the cab. In addition to the driver, there is an expert building superintendent and mechanical superintendent accompanying the delivery.

Arriving at their destination they hire local labor (about five men) and go to work unloading the truck. First they lay a foundation. Then they proceed to erect the steel framework. This part of the job is like playing with a gigantic erector-set. They pick up a cross-beam marked 22A and look for its corresponding number on some other member of the house-frame. When it is found the two are bolted together. After a bit of this, it is discovered that there are no more parts to assemble—and the structure is up. Four-foot wall panels are then bolted to the frame. The roof and floors are laid and in about two weeks after the arrival of the truck another home sold by American Houses, Inc., has gone up!

SIMILAR scenes are expected to be enacted all over the country as demand for the homes increases. And motor trucks will deliver the new Motohomes within a radius of 300 miles of central depots. The truck is definitely a part of this interesting plan to stimulate home ownership.

The idea of the American Motohome is believed to have originated with Thomas Edison more than 60 years ago. It was his idea, worked over by many others after him, that a complete home could be fabricated, shipped in a box and put together like a boy's erector-set on the family lot. More recently, an architect who spent part of his time planning homes for an exclusive clientele and the rest of his time experimenting with asbestos and cement, finally perfected a composition of the two materials and into which he threw a pinch of something about which he is very reticent. He compressed the materials with hydraulic pressure with integral insulation and evolved a wallboard about 3 in. thick which he called "Pyrestos."

Robert W. McLaughlin, Jr., found by test that Pyrestos was an ideal building material, possessing unusual qualities. On the strength of those qualities American Houses, Inc., was formed with architect McLaughlin as chairman

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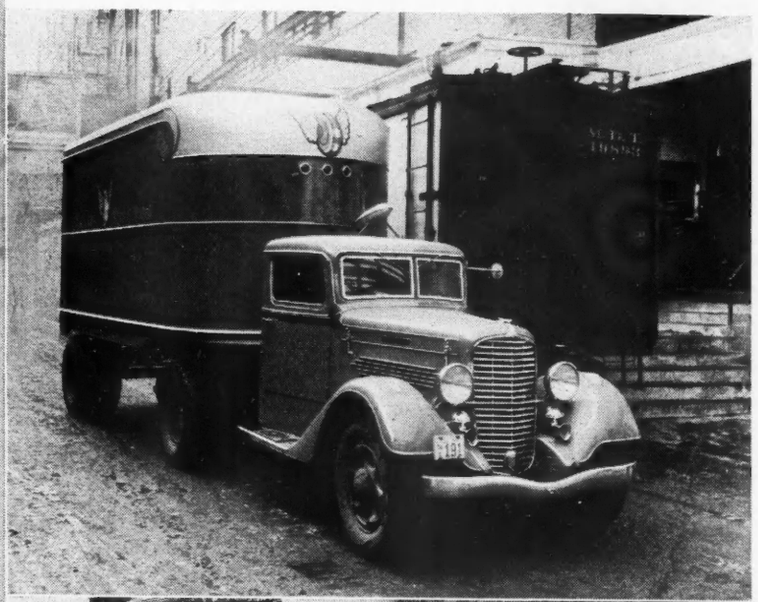
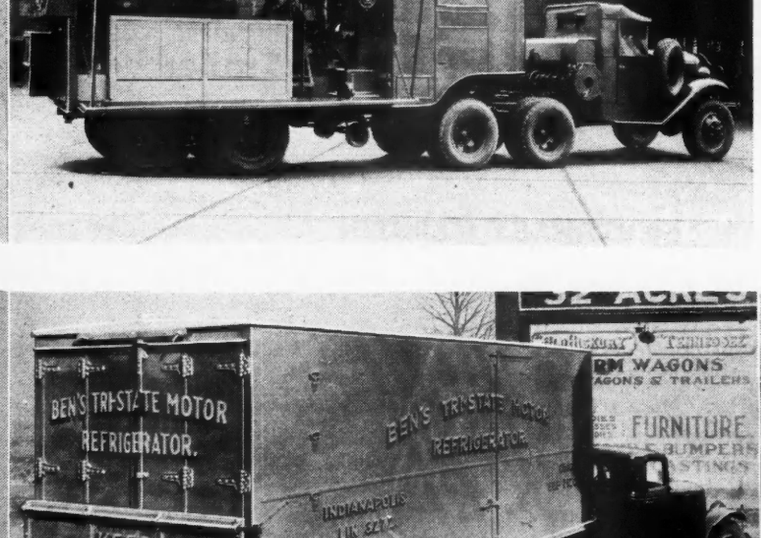
The ALBUM Of Modern



MERCHANTS DELIVERY LINE of Danville, Ill, chose an apt companion for this smart, modern-styled Diamond T tractor when it was hooked up to the B & J trailer chassis with an equally smart, modern-styled van body. The van body is of a special insulated semi-ribless construction with four layers of Reynold Metal insulation in the roof, sides and ends and three layers of insulation in the floor. Inside dimensions are 17 ft. long, 6 ft. 10 in. wide, 6 ft. 6⅜ in. high. Outside dimensions are 18 ft. long, 7 ft. 4½ in. wide, 7 ft. 10⅜ in. high. Double doors in the rear. The tractor is fully equipped.

THE Home Oil Co., of Passaic, New Jersey, goes International with this beautiful tank truck and in turn International brings to Home Oil a modern unit, the pride of Passaic, perhaps. The chassis is model C-60, 212-in. wheelbase, equipped with 10.50-20 tires front and dual rear. Tank is by Chas. H. Vass & Co., and has a capacity of 1500 gal. Equipment includes a power pump, meter and hose reel. The man in the picture who looks as though he were emerging from the tank (like a rabbit from a hat) is just fiddling with the hose connections.



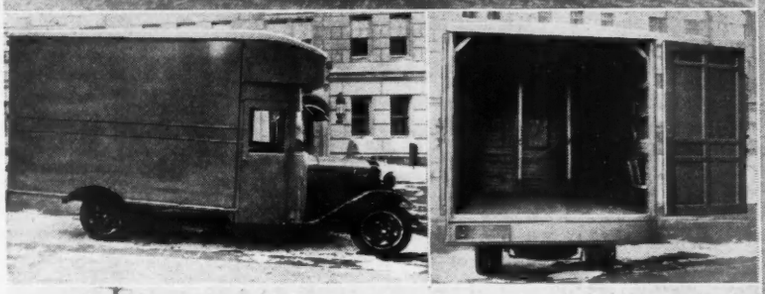
YO-HO-HO, a'camping we may go—over desert or jungle—it's all the same with this portable service station along to take care of breakdowns. The unique trailer contains a complete machine shop and wrecking equipment and provides "on-the-spot" service for motor caravans miles from anywhere and where there are no machine shops available in any case. The tractor is a Marmon-Herrington model A30-6 six-wheel drive and the trailer is Fruehauf's. When in operation the van sides open out (as shown). An extra set of tires will convert the front wheels of the tractor into duals. Equipment includes a gasoline motor-driven generator set, arc welder, milling machine, drill press, lathe, bench grinder, valve re-seater, air compressor, vulcanizing plant, water pump and storage tank, battery charger, blacksmith shop, winch and an assortment of hand tools.

BEN'S TRI-STATE MOTORS, Indianapolis, uses this refrigerated semi-trailer to haul steel! This is no joke because steel is hauled one day and meat is hauled the next day. So the Kentucky Mfg. Corp., Louisville, built it for Ben's unusual two-in-one type of operation. Note the specially designed hinged roof-hatch for crane loading of steel. Hatch-cover, roof and sides are insulated with Dry-Zero Seal-pad.

Truck Transportation Equipment

Additional details of any unit described will be furnished gladly on request.

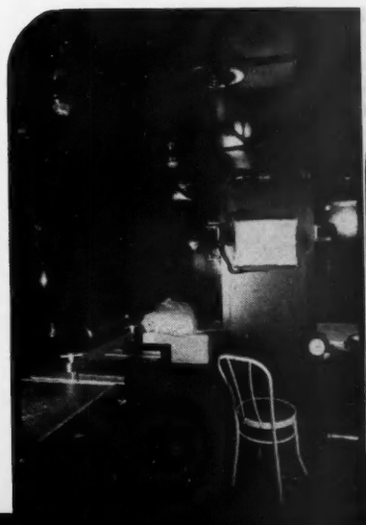
THIS streamlined job by Autocar is being operated by Brown-Marco of New York City and places the coal truck well up front in the style parade. The model is a UT with 128-in. wheelbase and sports a Heil Hi-Life body. Capacity is 10 to 11 tons. The streamlined cab, of course, is the pride of Autocar. Note the disk wheels.



BUILT for a prince and to his own specifications. And now Prince Alexis Mdivani trucks his famous polo ponies from polo field to polo field in this van body mounted on a standard Ford V-8 chassis. The van interior has stalls partitioned off. Ventilators are in the double rear doors along the top. An electric light mounted in the center of the middle stall illuminates the otherwise darkened interior.

FILL-UP with Phillips "66" and there's 2000 gal. in this tank from which to fill. Federal supplies the chassis and power. The unit is in use in Chicago and to be sure that it gets around all right, it is equipped with a Grico (Gear Grinding Machine Co.) third axle. The tank has seven compartments.

HOUSEWIVES from Columbus to Dayton, Ohio, look to John Wrobbel, of Bloomingburg, and his modern, insulated semi-trailer to bring them their daily bread still warm from the oven. The trailer permits capacity loads of 5000 to 6000 loaves stacked two layers to a shelf on four rows of removable shelving. Hoffman Auto Body Service, of Columbus, built the 16 ft. van on a Trailmobile chassis model TD-20, and a standard Ford V-8 does the pulling. Double full-length doors in the rear allow easy access. The drop-frame construction facilitates loading and unloading. Dry-Zero insulation in roof and sides keeps things hot for Wrobbel and the housewives.



THE GOVERNMENT of Porto Rico is proud possessor of this traveling tubercular X-ray clinic mounted on a 1½-40 cwt. Dodge chassis. The laboratory occupies five feet in the rear of the body where patients enter. The X-ray compartment is in the front of the body. Interior view shows equipment of the X-ray compartment, Fluoroscoping machine and all. Sheet steel blinds keep the interior dark.

These men make S. & E. wheels go 'round. Left to right (circle) A. L. Schwartz, general Schwartz, service manager. Standing in the rear are the shop men who keep

Super Service of the Truck

It Must Be Better Than Average cy's Chance for a Profit Rests Better Care of Motor Vehicles

MR. SCHWARTZ was, to put it mildly, vexed. To put it bluntly, he was mad as hell. A report had just reached his desk which told him that it had taken 19 minutes from the time a breakdown call was received for a relief truck and mechanic to get under way to the aid of a truck stricken at the roadside with a load of merchandise aboard. Whether or not the report was accurate was not a debatable matter. Those deadly time clocks established the 19-minute interval as an irrefutable fact.

At the time the reverberations sounded the loudest Mr. Schwartz was in the process of finding out not if 19 minutes had elapsed between the SOS and the departure of the rescue expedition, but why 19 minutes had elapsed between the call for help and the time that help got out the front door. Telephones rang as nearly simultaneously in the offices of the dispatcher and the service manager as it is possible to ring them from the single instrument in the executive office.

Five will get you ten if you believe that Mr. Schwartz did not get satisfaction before he let the matter rest.

Don't get the idea that Abraham L. Schwartz, general manager of the S. and E. motor Hire Corp., New York, is fond of throwing his organization into a turmoil, or that he does it often. As a rule it proceeds along a quiet routine that borders on serenity taking one problem at a time, solving it and then tackling the next one. When this routine breaks down or fails to take care of details in routine style, Mr. Schwartz wants to know why. His curiosity does not take the form of personal malice or threats but if you work for Mr. Schwartz you'd better have an answer if the breakdown occurs in what might be referred to as your territory.

New trucks are purchased by S. & E. to fit the particular customer's needs

manager; E. S. Shaw, safety engineer; H. M. Levy, Mr. Schwartz's man Friday; C. Charles the trucks rolling. Ben Von Pentz, shop foreman, front row—left

is the Heart Leasing Fleet

Because the Truck Rental Agen- on the Gamble That It Can Take As a Specialist Than the User

MOST fleet operations are not conducted on the principle that the trucks must make money. But truck rental agency fleets are, and this article tries to answer the question "how do they do it?" The core of the problem is the service shop and here its methods are given for fleet consumption.

The importance of the truck rental agency as a fleet operation is indicated in these figures for the S. & E. Motor Hire Corp. for 1934: Over 300 trucks operated; mileage, 4,321,681; gasoline purchases, $100,538.66; oil, $5,834.27; tires, $28,390.65; maintenance, $127,840.41; garaging, $78,-059.33.

Mr. Schwartz and his employees have been 15 years building this system and he wants it to work. The very existence of the business depends upon the efficiency of this routine. Your reporter spent several very pleasant hours observing this routine with E. S. Shaw and Harry M. Levy as guides, and very competent guides they were, too. Mr. Shaw handles the safety and sales promotion work for the firm. Mr. Levy is one of those men who defy titles. His duties consist of doing whatever Mr. Schwartz wants done at the moment.

THE S. and E. Motor Hire Corp., is in the business of betting truck operators, fleet or otherwise, that it can operate a truck or trucks for less money than can the individual operator. The formal classification of their business is "motor truck rentors." Mr. Schwartz

Colors and panel signs are done exactly to the customers specifications

SUPER SERVICE IS THE HEART OF THE TRUCK LEASING FLEET

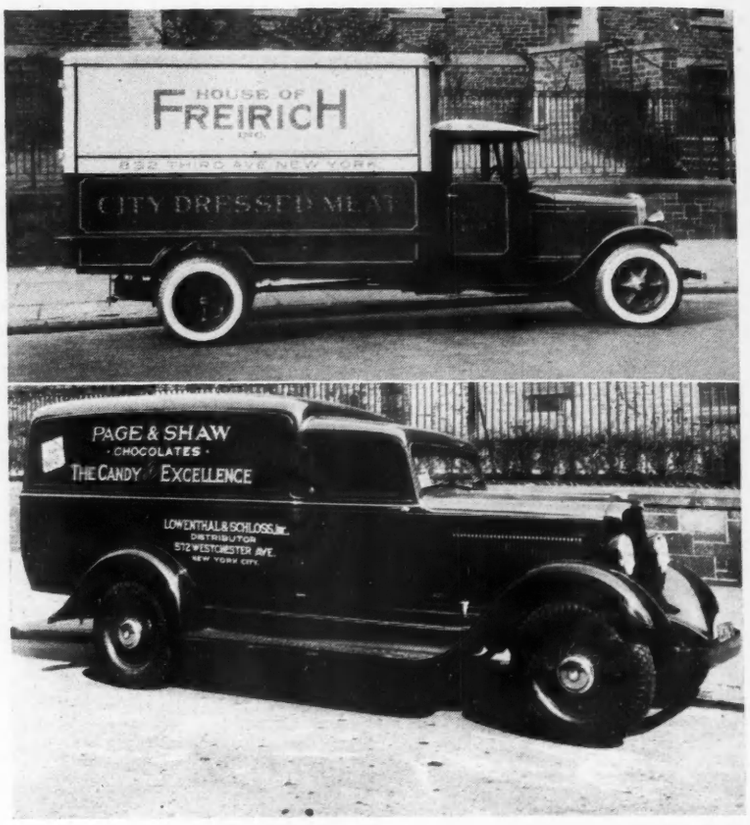
and his associates are willing to take as their profit the difference between their cost of operating trucks and a potential customer's cost of operating his own trucks. The drivers continue as employees of the individual and are paid by him. This spread, however thin you may think it, is the profit that satisfies S. and E. In other words, they are willing to become the transportation department of any business without additional fees. The whole S and E organization insists that it costs no more to let them operate your trucks with all the attendant worry. But we are interested in this operation from a fleet standpoint rather than from the peculiarity of their business.

Fortunately for COMMERCIAL CAR JOURNAL, the S. and E. Motor Hire Corp. does not consider as secret the things which it knows and does to reduce operating expenses. Details of operation or anything else that were considered interesting were ours for the asking. Customers are invited to visit the establishment and see all there is to see.

Investigation shows that S. and E. has won enough of its bets to gather and hold about 100 customers who use about 375 trucks, including a reserve of about 75. Two body builders, six painters, 30 men in the mechanical shop, and 10 floormen are required to keep this fleet in motion. Two dispatchers take the telephone calls and start the trucks and the usual amount of office help and sales force is required to man the headquarters and three branches.

Anyone connected with S. and E. who knows the inner workings, nods quick assent to the obvious suggestion that the superior purchasing power of so large a fleet has much to do with its operating economy, but he hurries to add that the purchasing power is not all—not nearly all. Selection of equipment, preventive maintenance and safety of highway operation are equally important factors.

WHEN a customer's truck or trucks are taken over (S. and E. buys whatever trucks the customer has) there is little that can be done about equipment selection. The truck is there and must be depreciated over a period of time. Sometimes the shop changes the rear axle to get more capacity or adds a booster to the brake system, but for the most part the trucks are put in good mechanical condition and their chronic failures studied with the idea of eliminating them. Occasionally this entails the installation of oversize generators when the failures are in the electrical system but more often it requires only some hard work resulting in periodic maintenance correctly performed. This state of affairs causes maintenance to precede equipment selection and so maintenance will be treated first in this article.



Above—Two totally different truck designs chosen by S. & E. for differing services

From the time that a truck becomes the property of S. and E., the engine is subject to a thorough inspection at least every two months. A very sharp line is drawn in the shop between an inspector and a shop mechanic. Their abilities lie along different lines and their training is different. The inspectors observe, adjust, diagnose and do routine jobs. Mechanics repair and overhaul.

Chasses are inspected at least every three months and when they are lubricated each month they are gone over by the lubrication man to the best of his ability for anything that may not be just as it should be. Such routine tightening and adjusting as applies to spring clips and shackle bolts is done every time the truck is lubricated.

In both the engine and chassis inspection all parts that will not last until the next inspection must be replaced. Wheels come off, engines are tuned, and barring normal wear the truck is ready for the normal work interval from one inspection to the next when it is finished. Brake drums galore have been saved by this inspection by catching a brake relining job before the rivets score the drum.

BEN VON PENTZ, the shop foreman, keeps a graph with each square upward representing a road service call. He proudly exhibited the chart and it took only a glance to see that there is a steadily increasing width to the valleys, and the peaks are not as high as they used to be. Spring breakage was once a major item in the shop but through experience Mr. Von Pentz has learned that if springs break at the center bolt it's because the clips were loose, and Mr. Von Pentz takes steps to see that it does not happen again. If they break at the clips they are overloaded, in which case he can install heavier springs or refer the matter to the operating department to see that the load is reduced or a heavier truck is selected.

Gas lines once broke on the road with discouraging frequency, so the copper lines were replaced when they broke with a synthetic rubber line which did not break. It goes without saying that Mr. Von Pentz beat the

road breakdown to the gun with this substitution as frequently as he could.

Wet engines that would not start once they were stopped on stormy days once made the peaks on the chart go up. Upon investigation, it was discovered that oil-soaked dirt when wet made an excellent conductor of electricity and encouraged current leaks from cables and grounded spark plugs. As a result the shop began an all-year-round engine cleaning campaign.

THE body shop has contributed its share to making trucks operate more economically for S. and E. than they have for their previous owners. The cost of body maintenance, if we are to believe the records and testimony of individual operators, has been the deciding factor in favor of leasing truck service in more cases than you would normally suspect. One of the biggest savings the body shop has been able to affect is to see that body moldings are replaced the day that they are knocked off. S. and E. has found that it is constantly inheriting trucks with bodies falling off due to looseness and rot simply because the owner did not have molding replaced promptly.

There is the case of the two electric sign maintenance trucks which were taken over when they were six months old. They were light delivery jobs and the bodies were about ready to fold up despite the fact that a great deal of money had been spent on them. Ladders were carried on the top of the body and were hung on hooks at each side. The body shop after fixing up the bodies redesigned the hanging apparatus so that the ladders did not bang against the body every time the truck went over a bump. Inside supports were added to remove the strain of ladder weight from the joints of the body sides and top, and no trouble has been experienced with these bodies since.

But no matter how good the maintenance, the time comes when it is no longer economical to operate a truck. It is time, if the book depreciation has been written off, to buy a new truck. So at this point our story becomes one of equipment selection. This is where S. and E. shines. More thought and more experience go into the selection of a new truck for S. and E. service than into the whole of fleet operation in many companies. At that S. and E. does not have a completely free hand. The customer may have some ideas about the new truck and after all he pays the freight, but for the most part any difference of ideas does not reach serious proportions.

As an example of the changes that are brought about by careful selection, a number of differences between new and old equipment is listed. In almost every case the wheelbase is cut where possible because of the crowded area in which these trucks work.

A radio distributor had three trucks of nominal 2 to 3-ton capacity. Without bodies these trucks weighed about 7000 lb. and they had about 300 cu. in. piston displacement. They were very good trucks but they were too much truck for the job. The trucks that replaced them weigh about 3600 lb. without bodies and they have a piston displacement of about 230 cu. in. The bodies have the same dimensions and the trucks are used only in city delivery on good streets where they have no use for more power.

Six uniform trucks do a better job of delivery for a department store than eight miscellaneous ones did before. Less capacity, more speed and some thought on the subject of scheduling did the job.

This list could be made to cover pages because it is seldom that the replacement is a replica of the truck it replaces. Selection of new trucks is a fine art on which the very existence of the business depends, and it reaches its most delicate point in the selection of trucks for the reserve. These trucks must be selected so that they may be used for a number of different purposes, as some customers who contract for the use of two trucks use 10 at Christmas time.

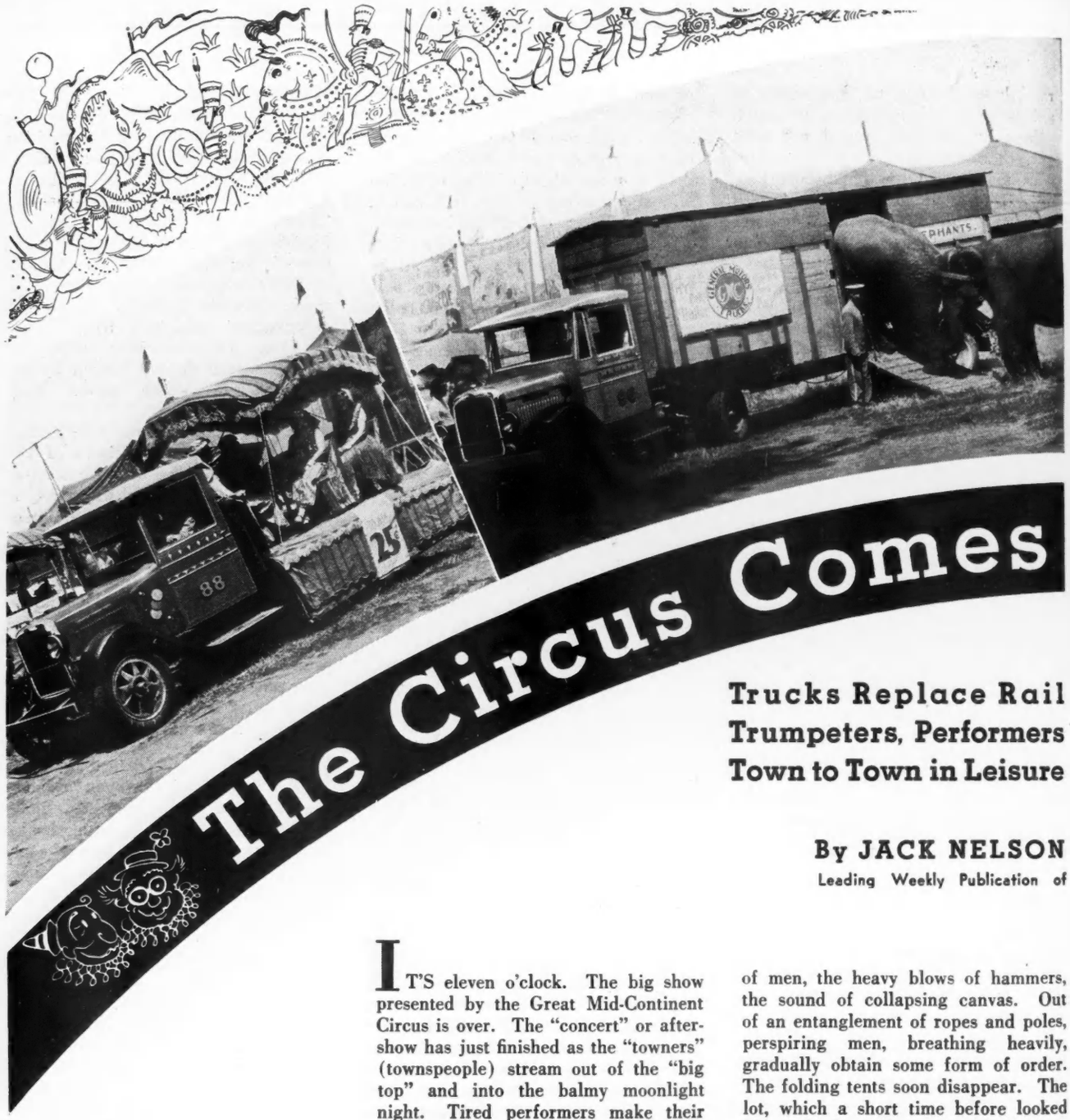
THE number of trucks of each capacity must be kept in direct proportion to the number of trucks of each rating in use in the active fleet. The dispatchers, unless they are careful, can put the company in the position of using worse misfits than any of its customers ever dreamed of having on the job. All of the reserve is painted "regulation red" and the S. and E. legend appears on it in a small decal-comania on the cab doors. Canvas signs for temporary hanging on reserve trucks have the name or trade mark of customers who have frequent use for them. The active fleet trucks have the colors and designs picked by the customers in whose service they operate.

After selection comes safety, and despite the fact that drivers of the trucks are employees of the customers and not of S. and E. highway safety is a subject that receives constant attention. Every time a driver manages a month without any accidents he receives from S and E a $2.00 check as a bonus. If his good record continues and he reaches a four-month period without an accident he receives a present. Wallets were the award one time, another time a watch. But no matter what is given to the deserving drivers, it is not flimsy.

IF the driver does have an accident he receives a letter from Mr. Shaw reminding him that he loses his bonus for the month. If he has any comment to make or feels that he is being condemned without a hearing the letter invites him to call on Mr. Shaw and clear up any misunderstanding. The driver's employer is also notified when he has an accident. If the accident involves a personal injury the driver, after he reports to Mr. Shaw, must take the next day off at his own expense and report to the insurance company. Apparently the insurance company knows how to impress drivers with the seriousness of a personal injury accident because no driver has any desire to renew the acquaintance of the insurance adjusters after making the first visit.

If the driver repeats his errors and continues to have accidents the employer is asked to remove him temporarily, and then if that does not help, permanently. Police representatives, insurance experts and others speak to the drivers occasionally to help them in conducting a safe fleet. S. and E. got the business of one company because the company had such a bad accident record that it could no longer get insurance. S. and E. has not had a particularly bad experience with that fleet since it has been operating it.

Design, finish and sign work are to the customer's liking



The Circus Comes

Trucks Replace Rail Trumpeters, Performers Town to Town in Leisure

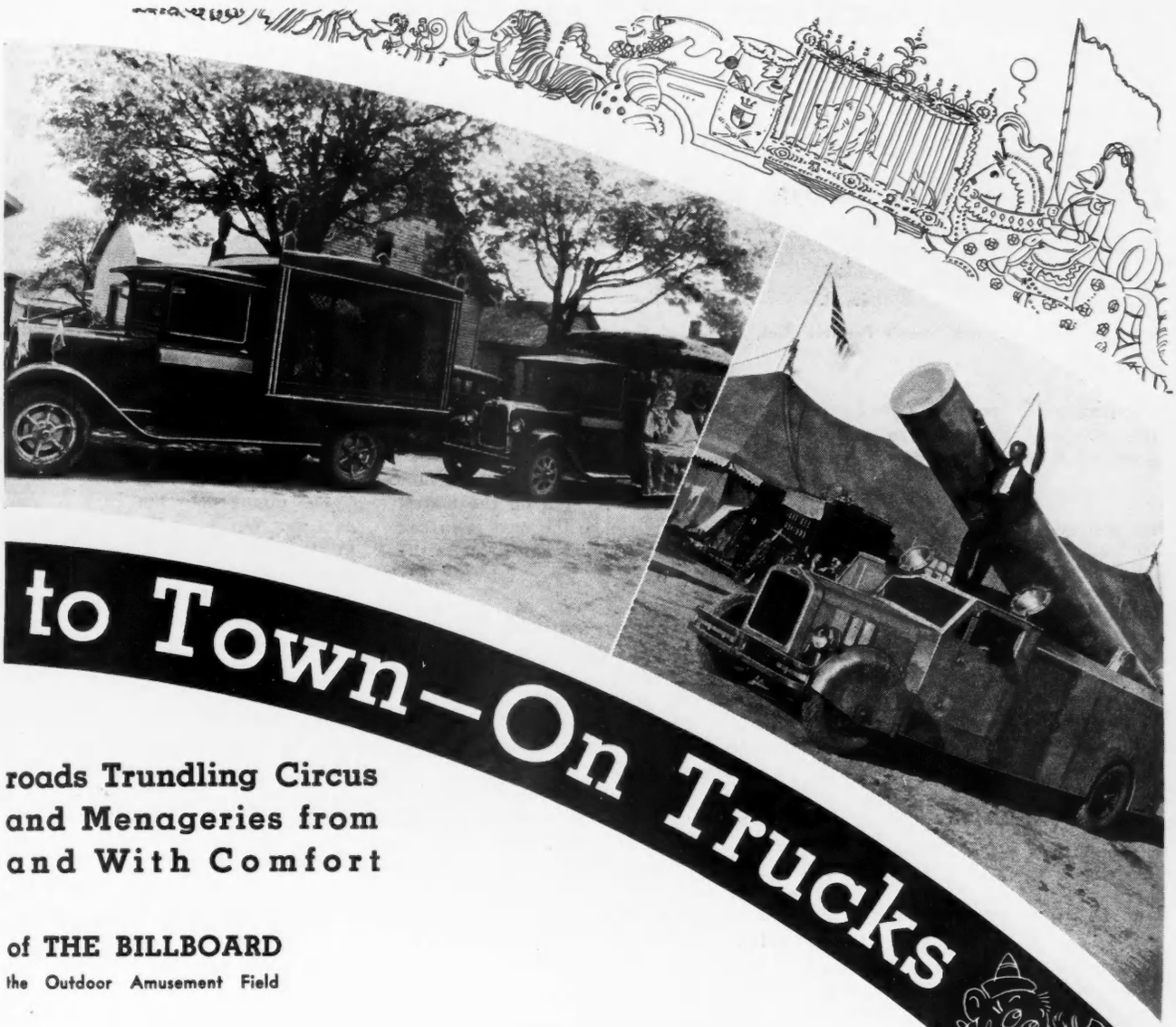
By JACK NELSON
Leading Weekly Publication of

THIS year approximately 5000 traveling shows will start "playing the towns," bringing amusements by means of the motor truck. Many circuses have already taken to the road with completely motorized units, thereby making possible short hops from town to town within a few hours. When trucks have completely replaced railroads in the job of toting circuses 50,000 trucks will be in use. This is an enter truck-exit railroad story, and tells the trucks' part in bringing the "Big Top" to your town. It will take you back to your kid days and make you say, "My, how times have changed."

IT'S eleven o'clock. The big show presented by the Great Mid-Continent Circus is over. The "concert" or after-show has just finished as the "towners" (townspeople) stream out of the "big top" and into the balmy moonlight night. Tired performers make their way back to the "pad-room" (dressing room) to peel off their costumes and makeup and resume their everyday life roles. Soon the lights start to twinkle in the "castles-on-wheels" (housecars) which are located in a perfect circle bordering the "back-yard" (the lot just back of the "big top"). Everything takes sudden life as the performers, freed from the restrictions their work imposes upon them, gather in family groups for an hour or so of relaxation before turning in for the night. There is no railroad schedule to make and so they can take their time about going to bed. Arising early the following morning, they drive to the next town in a few hours.

Elsewhere are heard the movements of men, the heavy blows of hammers, the sound of collapsing canvas. Out of an entanglement of ropes and poles, perspiring men, breathing heavily, gradually obtain some form of order. The folding tents soon disappear. The lot, which a short time before looked like a fresh mushroom patch, is soon devoid of anything relating to its recent glamorous occupancy. In a few hours the entire circus "lock, stock and barrel" is neatly and compactly loaded on trucks. Soon the roar of engines pulling loaded vans over broken terrain onto the highway is heard. And the rumbling of the caravan dies away in the night as the entire circus moves on towards the next town.

THIS year thousands of shows will take the road completely motorized, some having as many as 100 trucks in their caravans. The industry will need over 50,000 trucks when completely motorized.



to Town—On Trucks

roads Trundling Circus and Menageries from and With Comfort

of THE BILLBOARD
the Outdoor Amusement Field

Growth of motorized circuses has been phenomenal. Born of necessity, the show owners were forced by adverse railroad transportation conditions, high rates, etc., to select other means of transportation. Motor trucks and busses were decided upon and their efficiency was rapidly demonstrated. To complete this new mode of travel, passenger cars, trailers and tractors were added to the equipment already in use.

Approximately 5,000 traveling shows and attractions make up this industry. They are composed of circuses, carnivals, chatauqua units, stock companies, portable picture theatres, skating rinks and dancing pavilions, dramatic companies, vaudeville shows, repertoire and tabloid shows, minstrel, medicine and Wild West shows, state and county fair attractions and various other amusement enterprises. A large part of this business is already completely motorized.

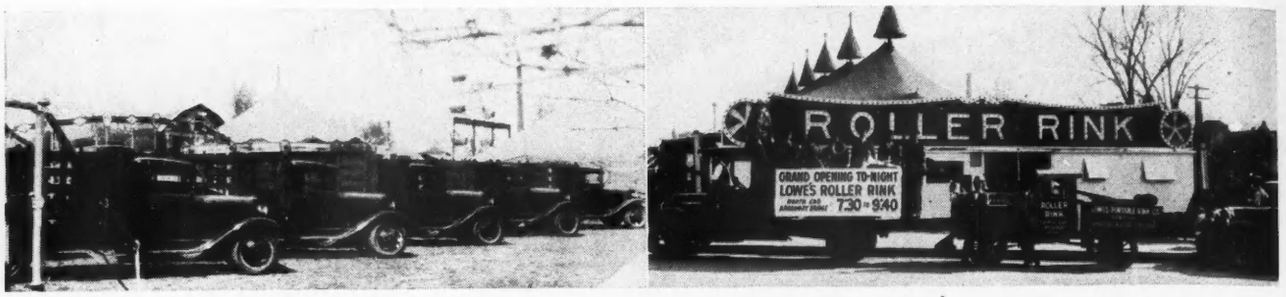
The practicability and serviceability of this type of transportation is demonstrated by the saving in time, handling and traveling expense. Some shows report savings of from $800 to $1200 a week. Other shows, visualizing in motorized transportation a solution of the old problems of railroad troubles and double handling of equipment are arranging to motorize as speedily as possible.

The astounding difference in cost of transportation, which does not include interest on the motor equipment investment, seems to be the answer to the problems of the modern circus owner. In these times of increasing competition, no circus owner can afford to cut down the quality of his show and yet some curtailment of expense must be made to counterbalance the steadily mounting taxes, living costs and salaries.

A careful record kept by one of the largest motorized shows reveals the

West Coast Shows tour on wheels in modern semi-trailers

THE CIRCUS COMES TO TOWN—ON TRUCKS



Sol's Liberty Shows and Lowes's Portable Rink, typical of the completely motorized amusements that are able to play small towns daily on short hops

following savings per day: (The figures were compiled for a 25-car railroad show and a 50-truck motorized show.)

Cost per Day by Rail

Railroad fare	$450.00
120 head baggage horses at $2 a day	240.00
40 drivers and helpers at $2 a day	80.00
15 trainmen at $2.50 a day	37.50
6 porters at $2.50 a day	15.00
$100,000 investment in train equipment, including interest	33.50
$24,000 investment, baggage horses, including interest	9.00
Train repairs	40.00
Total	$905.00

Cost per Day by Truck

Gasoline and oil	$40.00
40 drivers at 50c	20.00
Tires	32.00
Wear and tear on trucks	50.00
Total	$142.00

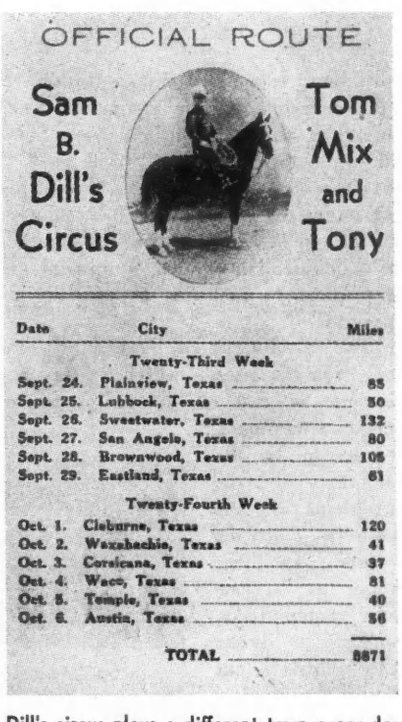
The low figure of 50 cents for drivers of trucks is made possible by the use of employees employed in the show.

BEARING in mind the comparison of the advantages of the motorized circus over the rail-transported circus, here are some marked benefits as observed during the past season. The circus employees never miss a meal and no matinees are lost except or rare occasions. Although late arrivals are sometimes unavoidable the motorized circuses never miss a parade.

Circus employees greatly enjoy this mode of travel. Most of them have their own private "bungalows-on-wheels and they are very appreciative of the many advantages of traveling on the well-paved highways in daylight, as compared with the dull routes of the average railroad at night.

Circus folk cannot gather for an hour's restful chat and a midnight snack before turning in, when traveling by railroad. They have to hurry off to stuffy coaches five or six blocks away on a siding, climb into their bunks and toss around half the night until they finally fall asleep. In the motorized show performers have individual homes on wheels. They are clean, comfortable, well-ventilated and roomy. After the show they can take it easy and relax even on the hottest nights. The run to the next town can be made leisurely in a few hours the following day.

ANOTHER very important factor in the motorized circus is that it is possible to maintain that glorious tradition of the street parade. The circus trucks are constructed with the view of making them attractive "wagons" for parade purposes. The animal cages, while carrying canvas covers while en route, are opened for the parade. The elephants, though transported in huge trucks, are available for marching; and the ponies and menage horses are ridden or driven, thus providing that equine glamour that has so great an appeal in every parade. Furthermore, the motorized circus parade is capable of moving with considerable rapidity, thus the question of traffic jams is reduced.



Date	City	Miles
	Twenty-Third Week	
Sept. 24.	Plainview, Texas	85
Sept. 25.	Lubbock, Texas	50
Sept. 26.	Sweetwater, Texas	132
Sept. 27.	San Angelo, Texas	80
Sept. 28.	Brownwood, Texas	105
Sept. 29.	Eastland, Texas	61
	Twenty-Fourth Week	
Oct. 1.	Cleburne, Texas	120
Oct. 2.	Waxahachie, Texas	41
Oct. 3.	Corsicana, Texas	37
Oct. 4.	Waco, Texas	81
Oct. 5.	Temple, Texas	40
Oct. 6.	Austin, Texas	56
	TOTAL	8871

Dill's circus plays a different town every day —just a few hours' distant by truck

The circus does not have to move as a unit, but as each division is ready to start for the next exhibition place, the motor truck is ready to start on its journey. Most of the highways which the circus traverses are paved. Good roads and celerity of movement make transportation by truck highly desirable. Traveling by motor truck also enables shows to exhibit in towns formerly not accessible by railroad due to almost prohibitive expense. Last season many towns were host to motorized circuses, in many instances the first circuses to show there in more than 20 years.

ANOTHER feature lends itself to movement of shows by truck. The owners of these enterprises, true showmen that they are, are keen to the advertising value of the brightly colored gay caravan of motor trucks and the entry into every town and through each town of importance en route is made in full parade formation, effecting a very strong advertising value not obtainable when traveling by rail. It is a fact that this continuous advertising increases the attendance from five per cent to 25 per cent.

Circus fleets vary in size and in types of units. Downie Bros. Circus has a fleet of 85 trucks. Tom Mix Circus operates 55 trucks and 14 busses, Ralph R. Miller Shows have a fleet of 46 trucks, Crafts Greater Shows use 55 trucks.

Trucks and equipment are maintained and kept in perfect condition at all times by expert mechanics, who travel right with the shows. Extra parts and spares are carried in stock for complete repair jobs of any description. Sometimes a factory man, who is a specialist in the particular type of equipment being used, travels along with the show wherever it may go, so that he is on the spot to cope with any emergency.

By H. R. BARNETT, Special Investigator, Commercial Car Journal

True Stories of the Evil Effect of Evil Regulation

The Public Service Commission of Pennsylvania Lets Operators' Pleas for Intrastate Trucking Permits Slip by and Merchants' Buying Power Slip Out of State

IN the March number of the COMMERICAL CAR JOURNAL I reported at length some of the ill-effects that inadequate transportation, due to discriminatory regulation, has had upon industry and commerce in Western Pennsylvania, and indicated that even the long-suffering merchants of Pittsburgh had been moved to protest. The end of the year 1934 echoed with such protests. Numerous individuals told me that they had made direct protests to railroad officials; small-town chambers of commerce added to the chorus; shippers and traffic bureaus far and wide had indulged in written complaints to the Public Service Commission concerning lack of highway transportation not only in the western half of the state, but between the region surrounding Philadelphia and the extreme west.

The shippers and merchants of Pittsburgh were finding support from unsought allies, although it has remained an unconcerted effort until the present time. The pressure was growing. The Public Service Commission granted a New York State trucker the privilege of acting as common carrier between Warren and Pittsburgh —just two places, but a straw in the wind. Other experienced men in the trucking industry, men stronger financially than previous applicants, with a thorough knowledge of the territory they sought to serve, filed applications with the Public Service Commission.

At Harrisburg a new administration would soon hold office. The railways were taking notice. In January, 1935, the railways initiated a mighty effort to stave off the criticism—and the trucking competition—which their indifference has invited for many years past, in this region.

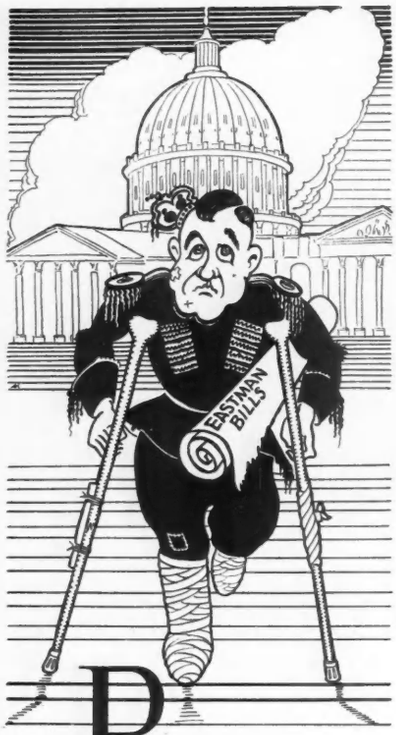
Evil regulation takes great toll in Western Pennsylvania

This effort has produced varying reactions among the business men with whom I talked, but a certain degree of skepticism is evident. Some were quick to point out that the railway officials had always devoted much time to proving that the less-carload business was unprofitable, which was reason enough for giving it service inferior to the carload traffic, and others emphasized that the biggest improvements were in those sections now the subject matter of trucking applications. There is no guarantee that with the refusal of permits to the various truckers seeking to operate in this region the railroads will continue the improved less-carload services.

Pursuing this investigation, I found that there were other aspects of this matter, which also show how gravely poor transportation of goods hampers the State of Pennsylvania. The agricultural interests are as much affected as are the industrial and commercial activities of the Commonwealth. Last year the farmers of this State sold crops exceeding $146,000,000 and fed another $60,000,000 worth to their livestock. Add to these the value of livestock sold, poultry, eggs and milk, and it becomes apparent that the buying power of the rural regions is something not to be disregarded or lightly tossed to neighbor states, as Pennsylvania has done.

It was in Townville, Crawford

(TURN TO PAGE 86, PLEASE)



The Status of Federal Regulation

Snarl in Eastman's Legislative Program, Jam in Congress and Confusion Among Interested Groups on Issues Menace Passage

By GEORGE T. HOOK
Editor, Commercial Car Journal

REGULATION of motor trucks during the closing days of April was lifted from the bottom of a mountainous heap of controversial federal legislation and shoved right up front with a suddenness that was looked upon as a major miracle by automotive groups located in Washington.

A week before the Senate passed Eastman's Motor Carrier Bill (S1629) with amendments and sent it over to the House, the chances of truck regulation coming to a vote weren't worth a plugged nickel, judged by the sentiment among the automotive groups.

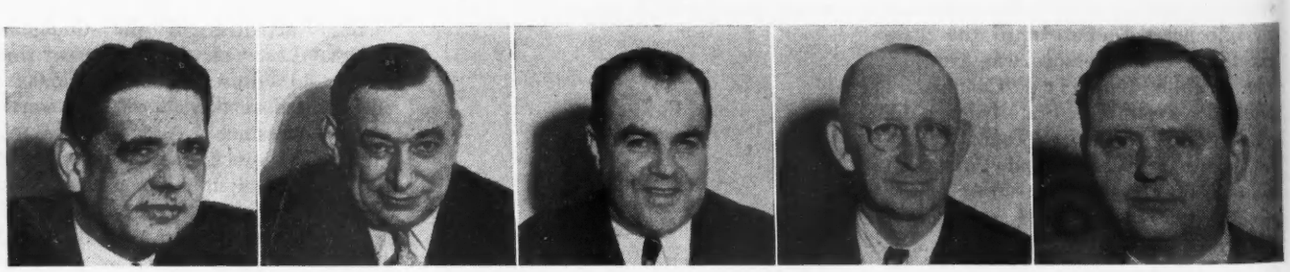
The sentiment actually fell just short of being unanimous. Pessimism predominated everywhere but among executives of the American Trucking Associations, Inc. Optimism in that quarter was based upon President Roosevelt's several declarations that he desired transportation legislation. Wishful thinking doubtless influenced this group, too, because the A.T.A. has announced its support of Coordinator Eastman's I.C.C. reorganization and truck regulation measures with amendments which, it is understood, have the Coordinator's approval.

The pessimists were guided entirely by the stupendous amount of recovery and reform legislation which still confronts Congress. Although the duration of the present session is indefinite, Congress customarily adjourns before Washington's summer heat makes things too hot even for legislators. That leaves three months in which to dispose of such prize Administration recovery measures as the Economic Security Bill, the National Industrial Recovery Act, amendments to the Agricultural Adjustment Act, soldier bonus, silver and other inflation measures, the Wagner Trades Disputes Bill, the Black Thirty-Hour Bill, and the Guffey Coal Bill. Also of such equally prize administration reform measures as the Rayburn-Wheeler Bill for the regulation of public-utility holding companies, and the Omnibus Banking Bill.

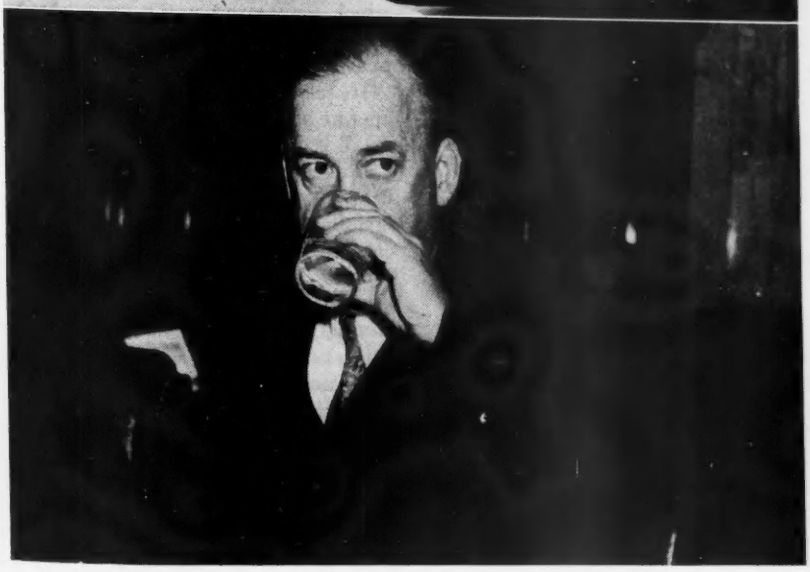
Put them all together and, the pessimists figured, they spell consumption of more time than Congress has at its disposal, and that leaves transportation out in the cold until the next session.

The Senate's passage of S1629 has not caused the pessimists (which includes not only doubters who are gloomy but those who are glad) to alter their opinion. The Senate's action was perfunctory, was taken without a record vote, and with full knowledge that the real test of motor carrier regulation would occur in the House of Representatives. And it remains doubtful that the House will do anything with Eastman's transportation program unless the White House presses the button. And the button isn't likely to be pressed at the expense of more important legislation.

Of course the President has committed himself to transportation reform



A.T.A. Spokesmen Shertz, Brashears, Rodgers, Horton and Loomis (resigned) who appeared at the Eastman Motor Carrier Bill hearings



but he hasn't committed himself to effecting it at this session of Congress. If he gets it through the next session he still fulfills his campaign promise.

So, having paid your money you can take your choice. Nobody will give you a serious argument. It's a toss-up and, anyway, that part of "the status of federal regulation" is relatively unimportant.

The important part—and the part where real confusion lies—is that covered by the question: If legislation is passed what will it be like, and who will support what? That sounds like a dumb poser, but give ear a moment and then deny, if you can, that the whole thing is just too, too goofy.

The confusion arises both from the interlocking characteristics of Coordinator Eastman's entire transportation reform program and the stand on his proposed legislation taken by the various interests involved. The legislation is in a tangled state. (The official term is "formative state.") It consists of six bills. The three of interest to highway transportation are the Water Carrier Bill, the Motor Carrier Bill and the I.C.C. Reorganization Bill. The Water Carrier Bill is the nigger in the woodpile, because the legislation mill will begin to unravel only when the Senate and House Interstate Commerce Committees decide the fate of the Water Carrier Bill. There seems to be a well-grounded suspicion that the Committees will decide to tie a can on this part of the Coordinator's program. If so, the Coordinator will have to change his I.C.C. reorganization bill which includes water carriers.

BUT the tangled state of the bills is a half-open knot compared to the complete snarl of "ifs, ands and buts" present in the opinions of those who oppose and those who favor federal regulation of trucks in interstate commerce. After breaking half a dozen

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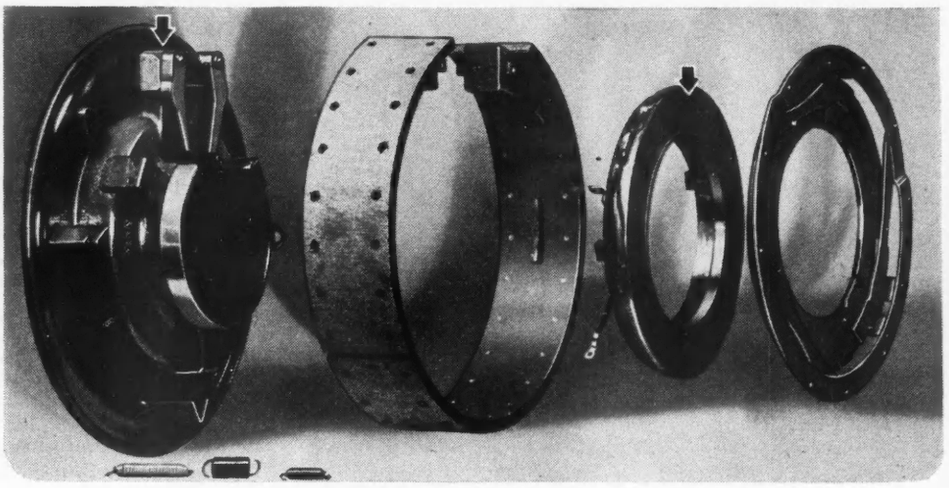
Coordinator Eastman testifying in defense of his recommendations

Railroad Spokesmen Pelley and Fletcher



Four main parts of the Warner Electric brake are (left to right): conventional backing plate, brake band, magnet and armature.

Warner Electric Brake for Truck and Trailer

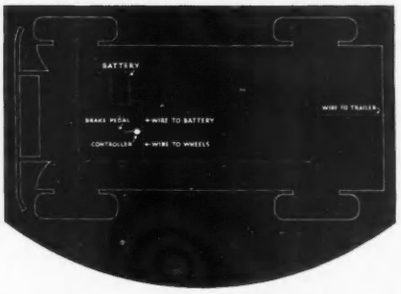
Foot Pressure Regulates Action of Electrically Operated Mechanical Brake Using Less Current Than is Required for a Tail Light

THE Mountain Type Warner Electric Brake made by Warner Electric Brake Mfg. Co., Beloit, Wis., eliminates the necessity of hydraulic or mechanical brake linkage and replaces these parts with enough No. 12 insulated wire to connect the live side of the starting switch to a controller and all four wheels. If a trailer is used the wire continues on through a trailer connection to the brakes of the trailer. A safety switch may be incorporated at the point of the trailer connection which will set the trailer brakes in case the trailer breaks away from the tractor.

The brake itself is a mechanical one, electrically operated. It consists of a conventional backing plate upon which is mounted a magnet which has the general size and shape of a clutch pressure plate. A steel friction plate designated as an armature is mounted in the brake drum and is held in constant contact with the magnet by means of three flat springs.

Included in the magnet construction is a trunnion which in operation actuates a cam which is held in place by brake band or shoe holding fixtures of the backing plate. The cam forces the band into contact with the drum. A self-energizing action expands the entire band against the drum.

Here is the action: The current is applied by depressing the pedal. This current energizes the magnet which grips the armature spinning with the drum, tending to make the magnet and armature a solid piece, with the result that the magnet moves in a rotating motion sufficiently to cause the attached trunnion to rotate the cam which forces the band against the drum. The revolving drum then expands the entire band against its walls. The band is returned to the off position by springs when the current is shut off by the pedal returning to its off position.

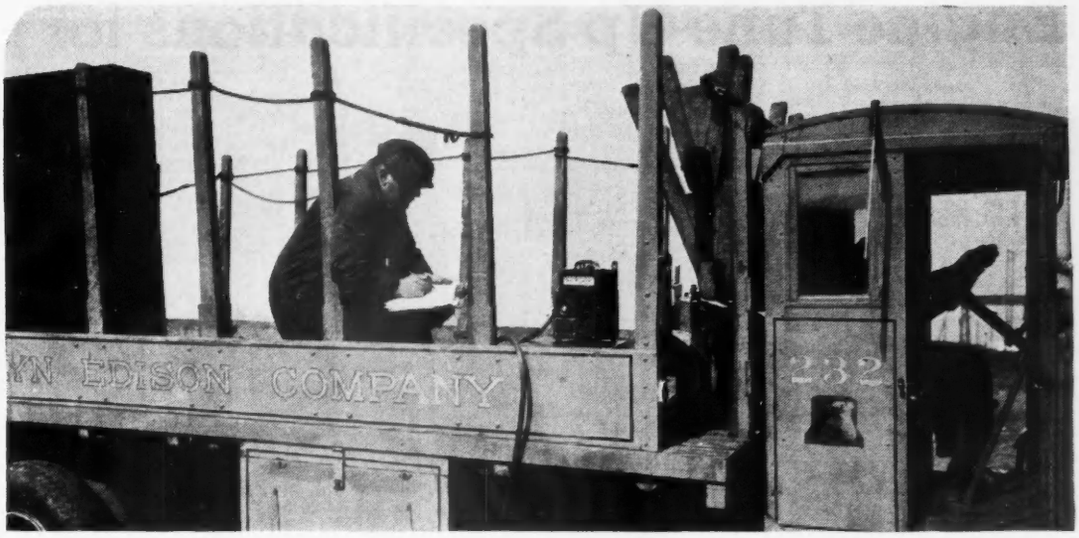


Insulated wire replaces brake linkage and connects the starting switch to the wheels.

There are 30 steps of current regulation in the controller box which gives ample graduation of braking ability. Deceleration is regulated by foot pressure but only a gentle pressure is required for maximum brake. A hand control is available for this brake, which makes it possible to apply the brakes on the trailer before the tractor brakes are applied.

It takes less electrical current to operate this brake than is required for a tail light.

There is no mechanical adjustment necessary at the shoes once the brake is installed. Extra travel of the magnet compensates for brake lining wear. This increased travel of the magnet keeps the bands always in perfect contact with the drum. Naturally there is no linkage adjustment as the linkage is replaced by wires which conduct the electrical current to the brake itself. Thus the brakes are always equalized as the electrical current always flows equally to each wheel. The equality of braking effort contributes to the long life of brake drums. The manufacturer claims that the installation of electric brakes is less expensive than the installation of any other power brake.



The exhaust gas analyzer helps to check engine tune-up

THE truck engine tune-up specifications table, compiled for the first time, and presented on the following pages, was made possible by the cooperation of truck and engine manufacturers, and Commercial Car Journal is deeply grateful to them for their help. The largest part of the job is done—that of getting started. Commercial Car Journal will remain active in gathering this information on new models and will present it to its readers at intervals dictated by the appearance of new models.

Engine Tune-Up Specifications

A Most Practical and First-Time-Anywhere Table Covering Old and Current Truck Models

THERE is probably no more important factor in efficiency and economy of fleet operation than that of engine tuning. It has held an important place in preventive maintenance programs since the idea of preventive maintenance programs was first conceived. But until this time the fleet operator has had a choice of setting his own standards for engine tuning or of gathering the necessary information as best he could from whatever sources he could. Some of the information was semi-official to begin with and it became badly distorted in handling.

Engine tuning specifications that have been battered around are not very helpful and sometimes do actual harm. With all due respect for the ability of the fleet operators of the country, they are not the ones to set standards for engine tuning. They have neither the time nor the equipment and, very often, not the training. Tuning standards should originate with the designer and should rate rigid adherence. Perhaps the value of some of the specifications does become enhanced by tempering with operating experience but, for the most part, operators will do well to accept factory recommendations.

On the following pages COMMERCIAL CAR JOURNAL presents for the first time a compilation of factory recommendations on most current truck models and many older models.

IN the first column are listed the various truck models and the information given in the second column identifies an engine make and model with each truck model.

The third and fourth columns give the factory specified tappet clearance at normal operating temperatures with the exception of the Ford clearances which are given with the valves cold. Too many mechanics are inclined to think of adjusting the valve end clearance as merely a means of eliminating objectionable noise. As a matter of fact the noise is the least important consideration. Valves set with either too much or too little clearance change the valve timing since the camshaft was made to operate on a standard setting. Too little clearance at the valve ends frequently results in burned and warped valves, and in seats being warped by the heat of the combustion chamber explosion escaping through the imperfect seal caused by the tight setting. Valves set with too much clearance have been known to pound the seats down and to destroy the valve by this same pounding. In addition, excess clearance often results in the valve hammering a hole in the face of the tappet screw with the result that the valve can never be prop-

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Engine Tune-Up Specifications for Old and

TRUCK MAKE AND MODEL	Engine Make and Model	OPERATING TAPPET CLEARANCE		Intake Tappet Clearance for Valve Timing	Intake Opens °TC B-Before A-After	No. of Flywheel Teeth Intake Opens TC	Breaker Point Gap (Inches)	Spark Plug Gap (Inches)	Spark Occurs °TC B-Before A-After	No. of Flywheel Teeth Spark Occurs TC	Breaker Housing	Compression Pressure at Cranking Speed
		Intake	Exhaust									
ARMLEDER—21H, 21HA	Her WXC	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	92
31H, 31HA, 41H, 41HA, 61H, 61HA	Her WXC2	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	92
71H, 71HA, TRDB	Her RSC	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	84
TRD	Her YXC	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	75
TRDA	Her YXC3	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	75
AUTOCAR—RG, RH, 6RH, RHT	Own RE	.015	.018	.018	TC	TC	.018–20	.025	8°	2¾	Ad	90
D, DF, DH, UPD, UDT, UDFT, 6D, 6DF, DT, DFT, 6UD, 6UDF, UD, UDF	Own SD	.015	.018	.018	TC	TC	.018–20	.025	8°	2¾	Ad	90
TF	Own SCH	.015	.018	.018	TC	TC	.018–20	.025	2°	¾	Ad	90
N, NFS, US, UNT, 6N, NT, 6UN, UN, UNF	Own SCM	.015	.018	.018	TC	TC	.018–20	.025	2°	¾	Ad	90
T, C, 6NF, 6T, UNFT, UTT, NFT, TT, 6UNF, 6UT, UT	Wau 6RB	.010	.018	.006	7°A	2½A	.018–20	.025	10°	3¾	Ad	85
BEIDERMAN—20, 30	Wau 6BL	.006–8	.010–12	.010	TC	TC	.020	.025	TC	TC	Re	112
10	Con 25A	.008	.010	.012	5°B	1¼B	.020	.025	TC	TC	Ad	87
40, 50	Wau 6BK	.006–8	.010–12	.010	TC	TC	.020	.025	TC	TC	Re	112
BROCKWAY—60, 80	Con 26B, 25A	.008	.010	.012	5°B	1¼B	.020	.025	TC	TC	Ad	87
65, 75, 90	Con 27B, 16C	.008	.008	.012	5°A	1¼A	.020	.025	12°B	3B	Ad	88
90, 100	Con 28B, 20C	.008	.008	.012	5°B	1¼B	.020	.025	5°B	1¼B	Ad	95
12D, 140, 141	Con 30B, 16R	.012	.015	.014	5°A	2A	.020	.025	10°B	4B	Ad	75
170, 195	Con 33B, 20R	.012	.015	.014	5°B	2B	.020	.025	15°B	5½B	Ad	78
175X, 18D, 220	Con 34B, 21R	.012	.015	.014	5°B	2B	.020	.025	15°B	5½B	Ad	82
240, 260	Con 35B, 22R	.012	.015	.014	5°B	2B	.020	.025	15°B	5½B	Ad	82
250, 290, 640	Con 36B, 16H	.008	.008	.0075	TC	TC	.020	.025	10°B	4½B	Re	74
125	Con 31B, E601	.012	.012	.012	8°B	3B	.020	.025	8°B	3B	Ad	81
150, 160, 180	Con 32B, E602	.012	.012	.012	8°B	3B	.020	.025	8°B	3B	Ad	81
CHEVROLET—1935—½, 1½ ton	Own	.006	.013	.006	4°B	1½B	.018	.032	5°B	2B	Ad	.....
1934—½, 1½ ton	Own	.006	.013	.010	4°B	1½B	.018	.032	10°B	3½B	Ad	.....
DIAMOND-T—211, 227, 243	Her JXA	.008	.010	.006	5°A	1½A	.020	.027	TC	TC	Re	96½
220, 311C	Her JXB	.008	.010	.006	5°A	1½A	.020	.027	TC	TC	Re	103
312, 351C	Her JXC	.008	.010	.006	5°A	1½A	.020	.027	TC	TC	Re	102
352	Her JXD	.008	.010	.006	5°A	1½A	.020	.027	TC	TC	Re	109
412B	Her WXLC	.006	.010	.010	2°A	½A	.020	.027	TC	TC	Re	106
412DR, 512B, 512DR	Her WXLC3	.006	.010	.010	2°A	½A	.020	.027	TC	TC	Re	100
DODGE—KC, KCL, KH Series	Own 201 Cu. In.	.006	.008	.011	6°A	2½A	.020	.025	3°A	1¼A	Re	95
K32, K33, K34	Own 217 Cu. In.	.006	.008	.011	6°A	2½A	.020	.025	2°A	¾A	Re	95
K35, K36, K37, K38, K45, K46, K47, K48	Own 241 Cu. In.	.006	.008	.010	TC	TC	.020	.025	TC	TC	Re	95
K50, K51, K52, K70, K71, K72	Own 309 Cu. In.	.008	.010	.010	6°A	2½A	.020	.025	4°B	1½B	Re	95
DUPLEX—(1929-34) S	Bud DW-6	.006	.006	.010	5°A	1²⅝A	.015–25	.025	9°B	3B	Re	.....
(1929-30) SAC	Bud BA-6	.008	.012	.010	5°A	2°A	.015–25	.025	6°B	2½B	Re	.....
(1931-35) SAC	Bud K428	.006	.006–8	.006	TC	TC	.015–25	.025	10°B	3B	Re	.....
(1932-35) K	Bud L525	.006	.006–8	.006	TC	TC	.015–25	.025	9°B	3B	Re	.....
(1929-1934) M	Bud GL-6	.008	.012	.010	5°A	2¼A	.015–25	.025	5°B	2¼B	Re	.....
FEDERAL—15X, 15	Her JXA	.008	.010	.006	5°A	1½A	.025	.025	TC	TC	Ad	.....
18X, 20, 21, 22	Her JXB	.008	.010	.006	5°A	1½A	.025	.025	TC	TC	Ad	.....
25	Her JXC	.008	.010	.006	5°A	1½A	.025	.025	TC	TC	Ad	.....
30	Wau 6MS	.010	.012	.004	8°A	3A	.025	.025	TC	TC	Ad	86
40	Wau 6MK	.010	.012	.004	8°A	3A	.025	.025	TC	TC	Ad	80
50	Wau 6MZ	.010	.012	.004	8°A	3A	.025	.025	TC	TC	Ad	80
C7, C8	Wau 6SRK	.010	.012	.004	10°A	3½A	.025	.025	TC	TC	Ad	80
FORD—(1929-31) AA	Own	.010–13	.015–17	.013	8°B	2⅛B	.018–22	.035	TC	TC	Re	75
(1932-33) BB-4 Cyl.	Own	.010–13	.020–22	.013	8°B	2⅛B	.018–22	.030	15°B	5B	.....	90
(1932-33) BB-YB*	Own	.0125–135	.0125–135	.013	9½°B	3B	.012–14	.025	4°B	1¼B	.....	105
(1934) BB-4 Cyl.	Own	.010–13	.020–22	.013	8°B	2⅛B	.018–22	.030	15°B	5B	.....	90
(1934) BB-V8	Own	.0125–135	.0125–135	.013	9½°B	3B	.012–14	.025	4°B	1¼B	.....	110
(1935) 51	Own	.0125–135	.0125–135	.013	9½°B	3B	.012–14	.025	4°B	1¼B	.....	110
GENERAL MOTORS—T16	Olds-6	.010	.010	.010	TC	TC	.018–24	.035	.....	.....	.....	.....
T18, T23	Own 221	.012	.012	.012	4°B	.....	.018–22	.035	15°B	.....	Re	.....
T33, T34, T73, T73H	Own 257	.012	.012	.012	4°B	.....	.018–22	.035	15°B	.....	Re	.....
T46, T46H, T51, T51H, T51W, T74, T74H	Own 331	.012	.012	.012	18°A	.....	.018–22	.035	17°B	.....	Re	.....
T61, T83, T75, T75T, T75H	Own 400	.012	.012	.012	18°B	.....	.018–22	.035	17°B	.....	Re	.....
T84, T78, T78T	Own 450	.012	.012	.012	8°B	.....	.018–22	.035	17°B	.....	Re	.....
GRASS-PREMIER—545	Wau, 6BK	.006–8	.010–12	.010	TC	TC	.....	.025	.....	.....	.....	112
555, 565	Wau 6-110	.010–12	.014–16	.010	15°B	.....	.....	.025	.....	.....	.....	97
575	Wau 6-125	.010–12	.018–20	.010	42°B	.....	.....	.025	.....	.....	.....	96
HAHN—HB4, HB5, HB6,	Wau 6BK	.006–8	.010–12	.010	TC	TC	.020	.025	TC	TC	Ad	112
300, HD2	Wau 6MZ	.004–6	.012–14	.004	8°A	3A	.025	.025	TC	TC	Ad	80
440, HE-2, 70	Wau 6SRK	.008–10	.016–18	.004	10°A	3½A	.025	.025	TC	TC	Ad	80
HUG 23, 23S42	Bud H298	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
42 Series, 70	Bud K369	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
43, 87K, 87Q	Bud K428	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
43L, 97L	Bud L-525	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
99	Bud GF6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15 Series	Wau 6BL	.006–8	.010–12	.010	TC	TC	.....	.025	.....	.....	.....	112
19 Series	Wau 6BK	.006–8	.010–12	.010	TC	TC	.....	.025	.....	.....	.....	112
INDIANA—85	Her JXB	.008	.010	.010	5°A	1½A	.018–20	.022	TC	TC	Re	87
14B Bus, 95, 95DR, 95SW75, 95SBT151	Her JXC	.008	.010	.010	5°A	1½A	.018–20	.022	TC	TC	Re	114
17, 17DR, 17SW251, 17SBT251, 19DR	Her YXC	.010	.012	.012	2°A	¾A	.018–20	.022	TC	TC	Re	91
17A, 17ADR, 17ASW251, 16 Bus	Her WXC	.010	.012	.012	2°A	¾A	.018–20	.022	TC	TC	Re	92
INTERNATIONAL—C1, C30	Own HD	.010	.010	.010	TC	TC	.018–24	.020–29	6°B	1¾B	Ad	95
M2, A2, C20, A1, C10	Wau XAH	.005	.007	.004	10°A	3A	.018–24	.020–25	5°B	1½B	Ad	72
B3	Own FAB-2	.015	.015	.024	10°A	3A	.018–24	.020–25	5°B	1½B	Ad	93
C35, B4, C40	Own FAB-3	.015	.015	.024	10°A	3A	.018–24	.020–25	5°B	1½B	Ad	93
A5, A6, C50, A4	Own FBB	.015	.015	.016	10°A	3½A	.018–24	.020–25	10°B	3½B	Ad	76
W2	HS 151	.012	.015	.010	2½°A	1A	.018–24	.020–25	7½A	2¾A	Re	65
C55, C60	Own FBB3	.015	.015	.016	10°A	3½A	.018–24	.020–25	10°B	3½B	Ad	92
A7	Own FDB	.011	.013	.011	10°A	4⅛A	.018–24	.020–25	5°B	2¼B	Ad	70
A8	Own FEB	.011	.013	.011	10°A	4⅛A	.018–24	.020–25	5°B	2¼B	Ad	68

ABBREVIATIONS: **Ad**—Advance **Bud**—Buda **Lyc**—Lycoming **Var**—Variable †—**Mack Compression Pressures** Model AB—73 with 4.2, 83 with 4.8
*—Aluminum Lead **Re**—Retard **Con**—Continental **Opt**—Optional **Wau**—Waukesha Model BG—81 with 4.95 compression ratio, 89 with 5.4, 101 with 5.65, 111 with 6.00
Au—Automatic **Mag**—Magneto **Her**—Hercules

Current Truck Models and Stock Engines

TRUCK MAKE AND MODEL	Engine Make and Model	OPERATING TAPPET CLEARANCE		Intake Tappet Clearance for Valve Timing	Intake Opens °TC B-Before A-After	No. of Flywheel Teeth Intake Opens TC	Breaker Point Gap (Inches)	Spark Plug Gap (Inches)	Spark Occurs °TC B-Before A-After	No. of Flywheel Teeth Spark Occurs TC	Breaker Housing	Compression Pressure at Cranking Speed
		Intake	Exhaust									
KLEIBER 80, 100, 81	Her JXB	.008	.010	.....	2°B	½B	.020	.027	TC	TC	Re	81
120	Con E601	.012	.012	.012	8°B	3B	.020	.025	8°B	3B	Ad	.....
140	Her WXC	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	92
210, 141	Con 21R	.012	.015	.014	5°B	2B	.020	.025	15°B	5½B	Ad	82
121	Con E603	.....	.....	.....	.....	.....	.020	.025	8°B	3B	Ad	.....
MACK, BL	Own	.008	.024	.008	6°A	2A	.012-15	.018-23	7°B	2½B	Ad	89
BG	Own	.008	.024	.008	6°A	2A	.012-15	.018-23	7°B	2½B	Ad	†
AB	Own	.008	.024	.008	10°A	4A	.012-15	.018-23	TC	TC	Mag	†
CE	Own	.008	.024	.008	10°A	4A	.012-15	.018-23	7°B	2¾B	Ad	†
CF	Own	.008	.024	.008	10°A	4A	.012-15	.018-23	7°B	2¾B	Ad	†
AC	Own	.008	.015	.008	10°A	4½A	.012-15	.018-23	TC	TC	Mag	65
BQ	Own	.008	.024	.008	10°A	4½A	.012-15	.018-23	2°B	1B	Ad	†
AP	Own	.008	.015	.008	10°A	4½A	.012-15	.018-23	2°B	1B	Mag	†
MARMON HERRINGTON—A10-4	Her JXA	.006	.006	.006	2°A	½A	.020	.025	TC	TC	Re	96
A20-4	Her JXC	.006	.006	.006	2°A	½A	.020	.025	TC	TC	Re	114
A30-4	Her WXC	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	92
A40-4, A50-4	Her WXC3	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	92
TH300-4	Her YXC	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	91
TH310-4	Her YXC3	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	91
TH310A-4, TH310A-6	Her RXC	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	103
TH315-4, TH315-6	Her HXB	.010	.016	.015	5°B	2B	.020	.025	TC	TC	Re	105
TH320-4, TH320-6	Her HXC	.010	.016	.015	5°B	2B	.020	.025	TC	TC	Re	105
PIERCE-ARROW—13S385	Own	0	0	0	5°A	.....	.018	.025	.....	.....	Re	.....
15T298	Her WXB	.010	.016	.010	2°A	¾A	.018	.025	TC	TC	Re	92
17T361, 18W361	Her WXC2	.010	.016	.010	2°A	¾A	.018	.025	TC	TC	Re	92
19R479, 24X479	Her YXC3	.010	.016	.010	2°A	¾A	.018	.025	TC	TC	Re	91
28M611	Her GXA	.016	.016	.010	5°B	¾A	.018	.025	TC	TC	Re	105
REO—2B4, 2L4, 1B4, 1D4, 2D4	Own	.007	.008	.012	TC	TC	.020	.025	10°B	4B	Ad	80
2L, 1B, 1D, 2B, 2D	Own	.007	.008	.012	TC	TC	.020	.025	10°B	3B	Ad	80
2H, 2J, 2K, 3H, 3J, 3K, 3M	Own	.007	.008	.012	TC	TC	.020	.025	10°B	4B	Ad	80
4H, 4J, 4K, 4M	Own	.007	.008	.012	TC	TC	.020	.025	10°B	4B	Ad	80
SCHACHT—20H, 20HA, 25H, 25HA, 28H, 28HA	Her WXC	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	92
35H, 35HA	Her WXC2	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	92
40H, 40HA, 40HB, TRD	Her YXC	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	75
66H, 66HA, TRDB	Her RXC	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	84
TRDA	Her YXC3	.006	.010	.010	2°A	¾A	.020	.025	TC	TC	Re	75
STEWART—(1930-5) 32X	Lyc ASE	.008-10	.010-12	.012	5°A	1¾A	.020	.025	9°B	3B	Ad	95
(1930) 33X, (1931) 36X	Lyc TS	.006-8	.010-12	.010	5°A	1¾A	.020	.025	9°B	3B	Ad	78
(1930-31) 34X	Lyc 4SL	.006-8	.010-12	.010	5°A	1¾A	.022	.025	9°B	3B	Ad	81
(1931-35) 38-6	Wau 6SRL	.006-8	.016-18	.004	10°A	.....	.....	.....	14°B	.....	Ad	80
(1931-35) 38-8, (1931-35) 48-8	Lyc AEF	.008-10	.010-12	.012	5°B	1¾B	.020	.025	9°B	3½B	Ad	95
(1932) 40XA, (1934) 41X, (1934) 42X, (1934) 44X	Lyc SA	.006-8	.010-12	.010	5°A	1¾A	.020	.025	9°B	3B	Ad	102
(1934) 43X, (1934) 45X, (1932) 50X	Lyc SB	.006-8	.010-12	.010	5°A	1¾A	.020	.025	9°B	3B	Ad	95
(1934-35) 46H, (1935) 47H	Wau 6BA	.010	.012	.010	TC	TC	.....	.....	5°B	.....	Ad	107
(1935) 48H	Wau 6LB	.006-8	.010-12	.010	TC	TC	.020	.027	5°B	.....	Ad	112
(1935) 49H	Wau 6BK	.006-8	.010-12	.010	TC	TC	.020	.027	3°B	.....	Ad	112
(1931-35) 58-8	Lyc HFA	.008-10	.008-10	.012	5°B	1¾B	.020	.025	.....	.....	.....	102
(1935) 18XS	Wau 6MK	.004-6	.012-14	.004	8°A	.....	.020	.027	3°B	.....	Ad	80
STUDEBAKER—T2, T4, T6, T8	Own	.006	.010	.010	5°A	1½A	.020	.025	1°B	TC	Ad	75
WB	Wau	.012	.016	.010	15°B	5B	.020	.025	3°B	1B	Ad	80
WALTER—FN	Wau 6MK	.008	.012	.004	6°A	.....	.018	.025	.....	.....	Ad	80
FM	Wau 6SRL	.008	.016	.006	8°A	.....	.018	.025	.....	.....	Ad	80
FCK, FC	Wau 6SRK	.008	.016	.006	8°A	.....	.018	.025	.....	.....	Ad	80
FB	Wau 6RB	.012	.014	.006	10°A	.....	.018	.025	.....	.....	Ad	76
WARD-LA FRANCE—25R-14, 25R-16	Wau 6ML	.008-10	.012-14	.004	8°A	.....	.....	.025	.....	.....	.....	89
25R-18, 30R-19, 30R-23	Wau 6MK	.008-10	.012-14	.004	8°A	.....	.....	.025	.....	.....	.....	80
320, 30R-20, 335RWS, 35R, 50D	Wau 6SRL	.008-10	.016-18	.004	10°A	.....	.....	.025	.....	.....	.....	80
K, 55RH, 55RWS	Wau 6SRK	.008-10	.016-18	.004	10°A	.....	.....	.025	.....	.....	.....	80
75RH, 100RW, 75RWS	Wau RB	.004-6	.008-10	.008	10°A	.....	.....	.....	.....	.....	.....	76
WHITE—54, 54A, 58S, 59, 59A, 64, 640, 641, 642, 643	Own 1A Series	.020	.025	.032	TC	TC	.016-18	.019-23	8°A	3A	Re	78
60, 601C, 601, 602, 61	Own 2A Series	.015	.015	.015	TC	TC	.016-18	.019-23	TC	TC	Re	.....
65, 65A Bus, 51AS, 58S, 59A, 620, 621, 63, 630, 631, 65K	Own 3A Series	.020	.025	.032	TC	TC	.016-18	.019-23	TC	TC	Re	81
613 Bus, 61, 611, 612, 612K, 618, 618K	Own 4A Series	.015	.015	.015	TC	TC	.016-18	.019-23	TC	TC	Re	106
54, 54A Bus, 640, 640K, 641, 641K, 642, 643, 691	Own 5A Series	.020	.025	.032	10½°B	4B	.016-18	.019-23	TC	TC	Re	83
685A Bus	Own 6A	.010	.012	.010	10°B	3½B	.016-18	.019-23	4°B	1½B	Re	.....
65, 65A Bus, 620, 620K, 621, 621K, 630, 630K, 631, 631K	Own 7A Series	.020	.025	.032	TC	TC	.016-18	.019-23	TC	TC	Re	.....
701, 702, 707	Own 8A Series	.010	.012	.010	5°A	1½A	.016-18	.023-28	5°B	1½B	Re	.....
713 Bus, 712, 718	Own 9A Series	.010	.012	.010	TC	TC	.016-18	.019-23	6°B	2B	Re	.....
684 Bus	Own 10A Series	.010	.012	.010	10°B	3½B	.016-18	.019-23	8°B	2½B	Re	.....
730, 731	Own 10AB Series	.010	.012	.010	10°B	4B	.016-18	.019-23	8°B	3B	Re	.....
WILLYS—77	Own	.004	.006	.010	TC	TC	.018	.024	4°B	1B	Au	85
HERCULES	JXA	.006	.006	.006	5°A	Var	.020	.025	TC	Var	Re	Opt
	JXB	.006	.006	.006	5°A	Var	.020	.025	TC	Var	Re	Opt
	JXC	.006	.006	.006	5°A	Var	.020	.025	TC	Var	Re	Opt
	JXD	.006	.006	.006	5°A	Var	.020	.025	TC	Var	Re	Opt
	WXC	.006	.010	.010	2°A	Var	.020	.025	TC	Var	Re	Opt
	WXC2	.006	.010	.010	2°A	Var	.020	.025	TC	Var	Re	Opt
	WXC3	.006	.010	.010	2°A	Var	.020	.025	TC	Var	Re	Opt
	YXC	.006	.010	.010	2°A	Var	.020	.025	TC	Var	Re	Opt
	YXC2	.006	.010	.010	2°A	Var	.020	.025	TC	Var	Re	Opt
	YXC3	.006	.010	.010	2°A	Var	.020	.025	TC	Var	Re	Opt
	RXB	.006	.010	.010	2°A	Var	.020	.025	TC	Var	Re	Opt
	RXC	.006	.010	.010	2°A	Var	.020	.025	TC	Var	Re	Opt
	HXB	.010	.016	.015	5°B	Var	.020	.025	TC	Var	Re	Opt
	HXC	.010	.016	.015	5°B	Var	.020	.025	TC	Var	Re	Opt
	HXD	.010	.016	.015	5°B	Var	.020	.025	TC	Var	Re	Opt
	HXE	.010	.016	.015	5°B	Var	.020	.025	TC	Var	Re	Opt
LYCOMING—(1929-32)	CT	.006-8	.006-8	.008	TC	TC	.018	.025	.....	.....	.....	.....
(1929)	C4	.006-8	.006-8	.008	TC	TC	.018	.025	.....	.....	.....	.....
(1929) on	C4W	.006-8	.006-8	.008	TC	TC	.018	.025	.....	.....	.....	.....
(1929) (Continued)	WSG	.006-8	.006-8	.010	TC	TC	.018	.025	.....	.....	.....	.....

Model CE—76 with 4.65, 91 with 5.2, 104 with 5.65
Model CF—74 with 4.6, 91 with 5.2, 100 with 5.5, 104 with 5.65

Model BQ—84 with 4.75, 86 with 4.9, 89 with 5.0, 103 with 5.6
Model AP—73 with 4.4, 83 with 4.8, 89 with 5.0, 96 with 5.3, 103 with 5.6

Engine Tune-Up Specifications (Concluded)

TRUCK MAKE AND MODEL	Engine Make and Model	OPERATING TAPPET CLEARANCE		Intake Tappet Clearance for Valve Timing	Intake Opens *TC B-Before A-After	No. of Flywheel Teeth Intake Opens TC	Breaker Point Gap (Inches)	Spark Plug Gap (Inches)	Spark Occurs *TC B-Before A-After	No. of Flywheel Teeth Spark Occurs TC	Breaker Housing	Compression Pressure at Cranking Speed
		Intake	Exhaust									
LYCOMIMG—(1930-31)—(Concluded)	WRG	.006-8	.006-8	.010	5°B	1½B	.018	.025				
(1931-32)	WTG	.006-8	.006-8	.010	5°B	1½B	.018	.025				
(1929-31)	4SL	.006-8	.010-12	.010	5°A	1¾A	.018	.025				
(1932 on)	SA	.006-8	.010-12	.010	5°A	1¾A	.018	.025				
(1932 on)	SB	.006-8	.010-12	.010	5°A	1¾A	.018	.025				
(1933)	SC	.006-8	.010-12	.010	5°A	1¾A	.018	.025				
(1929-31)	TF	.006-8	.010-12	.010	5°A	1¾A	.018	.025				
(1930-33)	TV	.006-8	.010-12	.010	5°A	1¾A	.018	.025				
(1929-34)	TS	.006-8	.010-12	.010	5°A	1¾A	.018	.025				
(1930-32)	AEC	.008-10	.010-12	.012	5°B	1¾B	.018	.025				
(1930-32)	AEP	.008-10	.010-12	.012	5°B	1¾B	.018	.025				
(1933 on)	AEF	.008-10	.010-12	.012	5°B	1¾B	.018	.025				
(1930)	ASA	.008-10	.010-12	.012	5°A	1¾A	.018	.025				
(1930-33)	ASB	.008-10	.010-12	.012	5°A	1¾A	.018	.025				
(1930-33)	ASD	.008-10	.010-12	.012	5°A	1¾A	.018	.025				
(1934 on)	ASE	.008-10	.010-12	.012	5°A	1¾A	.018	.025				
(1930 on)	AFE	.006-8	.006-8	.008	TC	TC	.018	.025				
(1931 on)	HFA	.008-10	.008-10	.012	5°B	1¾B	.018	.025				
WAUKESHA	6BK	.010-12	.012-14	.010	TC	TC		.025				112
	6MS	.008-10	.012-14	.004	8°A			.025				86
	6ML	.008-10	.012-14	.004	8°A			.025				89
	6MK	.008-10	.012-14	.004	8°A			.025				80
	6MZ	.008-10	.012-14	.004	8°A			.025				80
	6SRL	.008-10	.016-18	.004	10°A			.025				80
	6SRK	.008-10	.016-18	.004	10°A			.025				80
	6AB	.004-6	.008-10	.008	10°A			.025				76
	6RB	.004-6	.008-10	.008	10°A			.025				76
	6BL	.010-12	.012-14	.010	0			.025				112
	6-90	.010-12	.014-16	.010	15°B			.025				98
	6-110	.010-12	.014-16	.010	15°B			.025				97
	6-125	.010-12	-018-20	.010	42°B			.025				96

ABBREVIATIONS: **Ad**—Advance **Bud**—Buda **Her**—Hercules **Mag**—Magneto **Opt**—Optional **Re**—Retard **Var**—Variable **Wau**—Waukesha
*—Aluminum Lead **Au**—Automatic **Con**—Continental **Lyc**—Lycoming

Engine Tune-Up Specifications

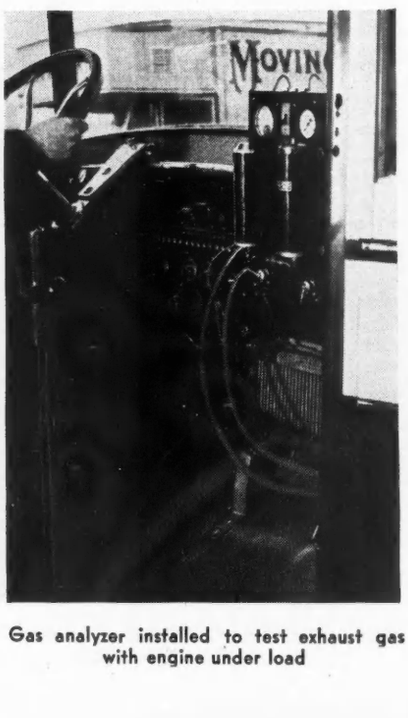
(CONTINUED FROM PAGE 37)

erly adjusted again until this surface has been refaced.

THE information in the fifth column gives the correct intake valve clearance setting for valve timing. It is essential that this setting be an accurate factory standard because in timing valves the point of intake valve opening is checked against the flywheel markings. If this valve is incorrectly adjusted the valve opening will occur at the wrong time.

The number of degrees that the intake valve opens before or after top center is given in column six. This is marked on the flywheel at the correct place. The information taken from this table in advance of the operation will give a rough idea of where to expect the marking. In case this "intake opens" mark is missing you can refer to column seven and locate the point where it should be, by counting flywheel teeth from top center.

The information given in column seven is there for three important reasons. First, in regearing the flywheel it is highly possible that the timing marks have become eliminated or obliterated. Second, in working through the small flywheel housing openings used at present a knowledge of the location of the mark by flywheel teeth will help materially in getting the mark opposite the indicator by making it easy to locate. Third, there are still a number of engines in which the flywheel to crankshaft flange bolts and bolt holes are not offset, with the result that it is possible to assemble the flywheel in the wrong position. If the flywheel has at some time or another been removed and assembled in the wrong position there would be no method of locating the timing positions unless the number of teeth from top center were known.



Gas analyzer installed to test exhaust gas with engine under load

Columns eight and nine give the breaker point gap in inches and the spark plug gap in inches. Every mechanic knows the importance of these. The information is official factory information.

IN columns 10 and 11 timing information is given the same as the information given in columns five and six only this time it is given for the spark timing instead of the valve timing. From the information given in column 12 it is possible to determine if the spark timing specifications given in columns 10 and 11 apply with the breaker housing in advanced position or in retard position.

From the information in the last column it is possible to tell if the engine needs more serious attention than tuning and it also acts as a guide to the result that may be expected from engine tuning. The tuning operation cannot be expected to restore compression. If compression is lacking the benefits derived from engine tuning will be lost on a graduated downward scale.

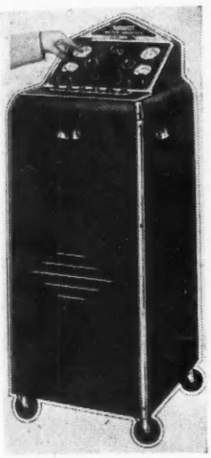
An exhaust gas analyzer will help in reaching the highest engine efficiency which is the purpose of engine tuning. It will measure the complete result and closer acquaintance with it makes it possible to understand clues given by it regarding the efficiency of the various factors involved.

New Products on Parade

Descriptions of the Latest Items Put on the Truck Market by Equipment and Specialty Manufacturers

Marquette Analyzer

A NEW motor analyzer is announced by the Marquette Mfg. Co., Minneapolis, Minn. This new instrument is a large all-steel cabinet mounted on rubber-tired casters. All mechanism is enclosed except the dials, which are mounted on a walnut instrument panel. Checks all phases of engine performance and all electrical disorders. All connectors, cables and fittings are stored within the cabinet.



Motor analyzer

The cabinet is rigid all-steel with chromium trim and contains a tool compartment and space for battery.

Slam-and-Take-Up Lock

THE A. L. Hansen Mfg. Co., Chicago, has a new lock for truck doors called the Slam-and-Take-Up Lock. The bolt is angled so that the door slams shut easily. The other side of the bolt is angled, which permits the bolt to enter into the hole in the striker plate as wear takes place and since the bolt is always under tension the door is always held tight.

Water Pump Parts

A LINE of factory-duplicate water pump parts is being marketed by Thompson Products, Inc., Cleveland, and is offered in a 36-page catalog of these items. Listings include assemblies, shafts, impellers, packing and packing nuts for cars, trucks, buses and buses and tractors. Some of the shafts are chromium-plated or of stainless steel. Impellers are of bronze or iron, and bushings are self-lubricating or plain, depending on the material of the part replaced.

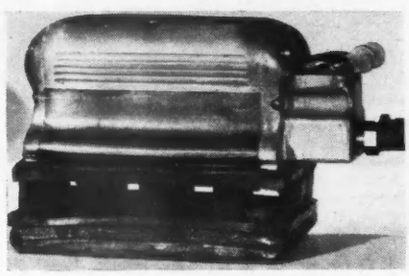
Leakproof Truck Flare

THE Anthes Force Oiler Co., Fort Madison, Iowa, have a leak-proof truck flare (trade name Trukflar) which has a capacity of about one quart. It burns 12 to 22 hours and will stand wind velocity of 55 m.p.h. without going out. It will burn in a downpour. A screw on snuffer cap seals against fuel leakage.

Sterling Sanding Machine

A NEW sanding and polishing machine is introduced by the Sterling Products Co., Detroit and Los Angeles. It weighs 7 lb. and operates on 60 lb. or more of compressed air (using 6 cu. ft. of air per min.), thus making it suitable for small shops and for production lines.

The sanding motion is an oscillating or reciprocating one. The stroke travel of the abrasive pad is 1¼ in., at the rate of between 2500 and 3000 oscillations per min. The pad moves back and forth with the same motion as in hand sanding,



Sanding and polishing machine

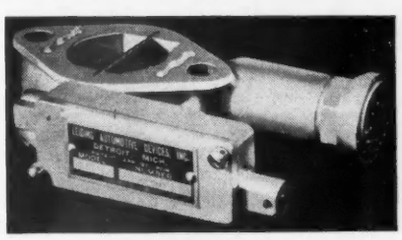
hence it does not leave a graining or chasing in the surface.

The motor is simple in construction and is sealed in an aluminum case. The pad is applicable to convex or concave surfaces, along moldings, and in places difficult to sand.

For wet sanding, a water connection is provided with a series of openings on each side of the machine for spray adjustment.

Leibing Governor

THE Leibing Automotive Devices, Inc., Detroit, have produced a governor which features simplicity of construction and a



Leibing governor

four-point blade in the airstream. It does not curtail the power below the governed speed, in fact, by acting as a straightener to offset the deflection of the butterfly valve it improves the peak torque by improving the distribution. The four-point blade is mounted on ball bearings. Does not hamper gear changes or acceleration.

Carbon Monoxide Alarm

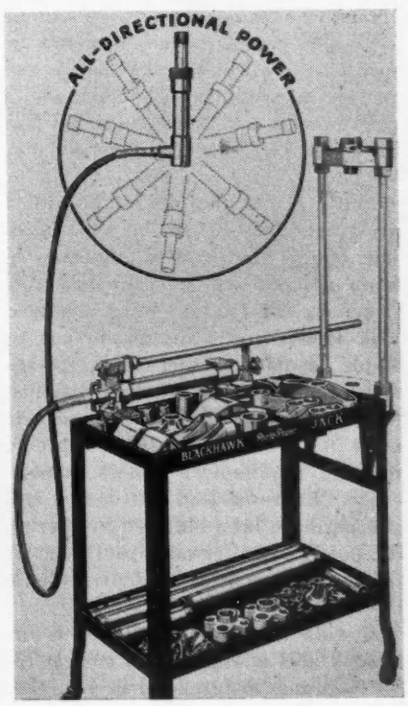
THE Mine Safety Appliances Co., Thomas and Meade Streets, Pittsburgh, announces a carbon monoxide alarm which gives prompt warning by ringing an electric gong, when the amount of carbon monoxide in the air reaches the danger point. The device has been thoroughly tested. Write for booklet.

Blackhawk Porto-Power Jack

A HYDRAULIC jack adapted to body, fender, frame and shop work has been announced by Blackhawk Mfg. Co., Milwaukee, Wis.

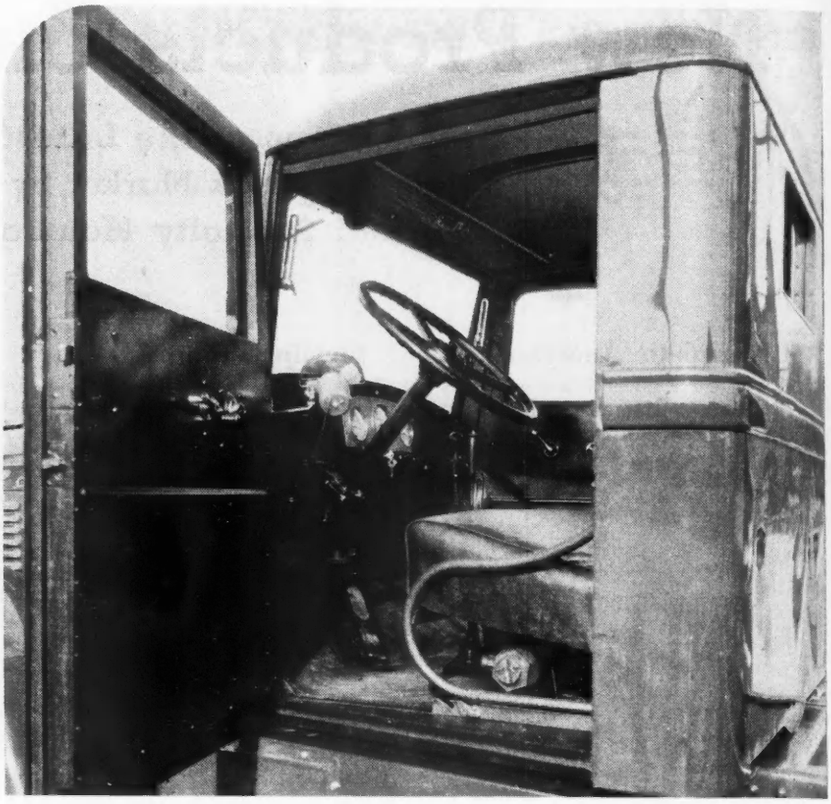
The new unit, called Porto-Power, combines all tools needed for rough body repair operations. The division of the jack into two sections enables the ram to deliver full power in any direction. The ram is threaded at both ends to permit attachment of 30 accessories.

The stand carrying the equipment is of sturdy, welded steel construction and moves on ball-bearing casters. The pump for the jack is mounted on one side of the stand and is removable for work in or



Porto-power jack

under automobiles. The ram unit is connected to the pump by a 6-ft. reinforced flexible hose capable of withstanding high pressures. There are 30 attachments.



Standard cab for Brockway's new line has modern seats, an electric fan and full ventilating windshield. Note overhead shelf for driver's papers and accessories. The roof is one-piece pressed steel

New Brockways Have Front-End Standardization

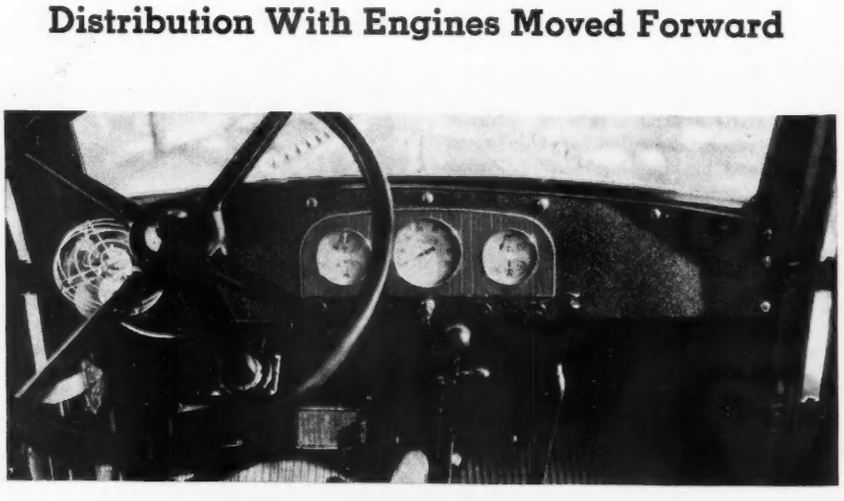
11 Models Ranging in Gross Weights from 10,500 to 21,000 lb. Have Improved Load Distribution With Engines Moved Forward

ELEVEN new models replace the five previous models in the light-intermediate range of the Brockway Motor Co., line. The addition of six new models makes it possible for Brockway to better tailor the truck to the specific job. Engines have been moved forward in all of the new models which gives better load distribution and more loading space for the same wheelbase.

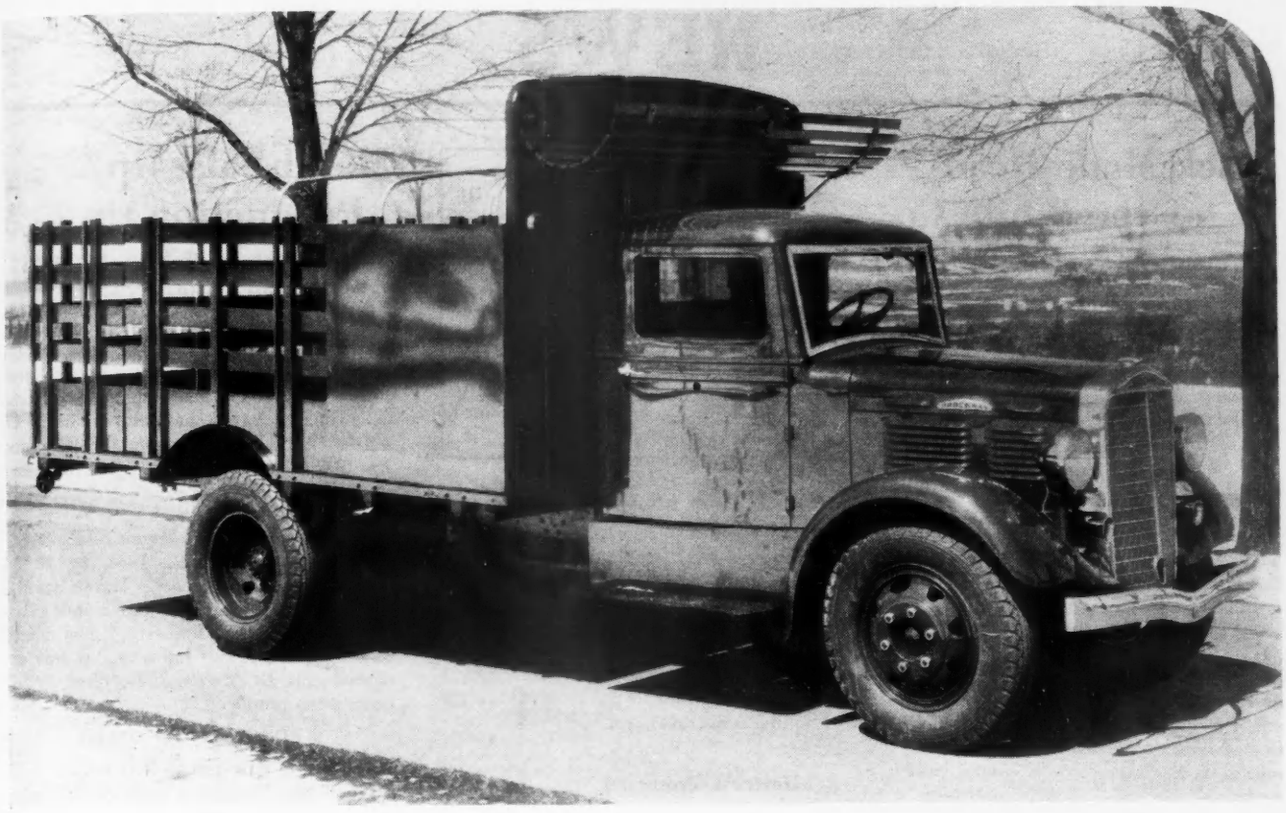
The new trucks which cover the 10,500 to 21,000 lb. gross rating bracket are distinctively styled and the new appearance gives the impression of stamina. All parts such as fenders, running boards, gas tank, radiator shell, headlight, bumper and cab which have no relation to the actual load carrying or operating ability are the same throughout the new models. This standardization gives the same distinctive appearance to all of the new models and results in simplified assembly and a reduction in production costs which is passed on to the buyer in improved construction.

Starting with the Model 78, with a gross rating of 10,500 lbs., the entire line of 11 new models presents the latest advancement in heavy duty construction; all models being equipped with latest type hydraulic brakes of ample capacity, heavier axles, springs and frames, with the required combination of engines, transmissions and rear axles to take care of every specific trucking requirement in this tonnage range. Improved load distribution and steering have been obtained by moving the power plant forward, providing increased loading space for a given wheelbase.

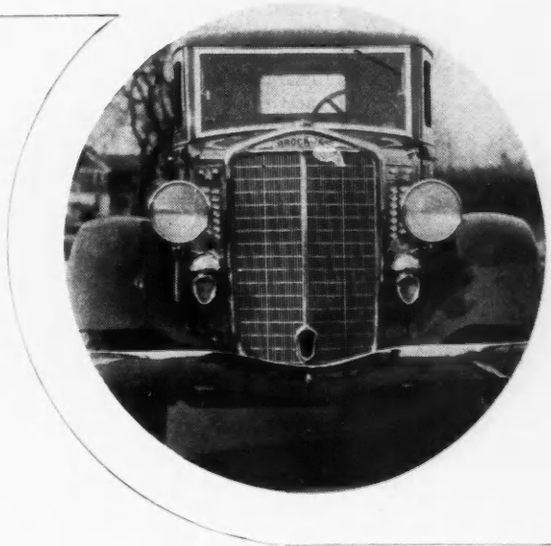
A wide range of wheelbases is offered in this new line, with models 78, 87, 90X, and 96 furnished in 126, 138,



Looking at the dashboard of the new Brockway cab from the driver's seat. The fan may be turned in any direction



One of the new Brockway heavy-duty models with standardized front-end. The overhead "basket" holds the tarpaulin—or what have you



The front-end features an attractive streamlined design and integral cowl. Fenders, running boards, gas tank, radiator shell, headlights and bumper are standard on all models

144, 150, 164, 170 and 176 in., and the heavier models furnished also in 182, 188, 200 and 206 in. wheelbases.

THE standard cab furnished on this new line of models is built in Brockway's body and cab plant and features an attractive streamlined design with integral cowl, one piece pressed steel roof, full ventilating windshield with cowl ventilator, furnished with safety glass throughout. The new design adjustable seat provides exceptional driver comfort with easy access to and from the cab due to the special seat construction and width of the cab doors. Handy storage shelf is provided above the windshield with dome light. Space is provided in the corner of the cab for kit of tools and the hydraulic jack is stored under the seat where it is easily reached. The new cab is fully weatherproofed and all metal parts and accessories are full chromium plated. Gas tank is located behind right hand running board apron and the battery in the left hand one.

Gross capacities are as follows: Model 78—10,500 lb., Model 87—12,000 lb., Models 90X and 96—14,000 lb., Models 110 and 125X—16,000 lb., Models 130, 145, 150X-4 and 150X5—18,500 lb., and Model 157—21,000 lb.

The engines furnished in this new line are all L-head type Continentals ranging from 71 to 90 hp. Oil bath air cleaners are standard equipment and H-W oil filtrators are furnished on all models from 96 up.

EACH model has a Timken heavy duty full floating, spiral bevel gear drive rear axle, and heavier springs have been provided throughout on the new line. Radius rods of tubular section are furnished on Models 130 and up. Single dry plate clutches are standard throughout these new models, and the transmissions are of the four speed selective gear type, with the exception of the 150X-5 which is furnished standard with a five-speed transmission. The latest type Spicer needle bearing universal joints and propeller shafts are standard with all of these models. Ross cam and lever steering gears of increased size are standard.

Specifications on these new Brockway models appeared in the April issue of COMMERCIAL CAR JOURNAL.

NEWS

Black Made Head of the White Co.

Piroomoff Takes His Place as President of Brockway

At the first meeting of the reorganized board of directors of The White Co., in Cleveland, Robert F. Black was named president and A. G. Bean, chairman of the board. Mr. Black assumed the office on May 1. Other officers elected were T. R. Dahl, executive vice-president and secretary; George H. Kelly, vice-president and treasurer; G. F. Russell, vice-president in charge of sales; H. K. York, vice-president, public works division; S. G. Grilly, controller.

Robert F. Black

The Brockway Motor Truck Corp., of which Mr. Black has been president since late in 1930, elevated George S. Piroomoff vice-president in charge of engineering, to its presidency. All other officers re-elected were George A. Brockway, chairman of the board; Joseph Gosner, vice-president in charge of export; Mark J. Kelly, treasurer; Frank C. O'Dell, secretary.

George S. Piroomoff

Mr. Black has been associated with the truck industry almost a quarter of a century. He was vice president of the Mack company before becoming president of Brockway. There Mr. Black found Mr. Piroomoff, who had left The White Co. in 1927 to become chief engineer of Brockway, and who designed a new line of Brockway trucks which became an instant success.

Both Mr. Black and Mr. Piroomoff have a wide personal acquaintance among fleet operators.

Moorhouse with Morse Chain

Alfred Moorhouse has been appointed chief engineer of the automotive division of the Morse Chain Co., Ithaca, division of the Borg-Warner Corp. He will be located in Detroit.

Lukens Ups Barnes

Walter E. Barnes has been appointed assistant to F. H. Gordon, vice-president in charge of sales of Lukens Steel Co., Coatesville, Pa.

He Couldn't Stomach This One

A square card containing names and phone numbers of alleged gangster associates was just too much for Michael Campano, of Philadelphia, to swallow. As a result police of that city recovered the card and now hope to take in tow accomplices who are thought to have aided Campano in a series of truck robberies.

Truck Cost Formula Extended

The NRA board has approved the Trucking Code Cost Formula extension in its present form. Under this approval, authorization is given for the continuance of the cost formula indefinitely. State authorities may now proceed with the conduct of rate hearings and rendering of decisions according to code provisions for handling complaints, etc.

Hartnett Promoted by Gilmer

The L. H. Gilmer Co. has promoted Daniel J. Hartnett to field supervisor of the Automotive Division. His activities will consist of working with district managers in various territories to promote sale of Gilmer automotive products.

Tanden Drive for Ford, Chevrolet

Arrangements have been completed by Wheels, Inc., with the Thornton Tanden Co., of Detroit, for the installation and sale of Thornton Dual Ratio four wheel drive attachment for Ford and Chevrolet trucks. The unit consists mainly of the introduction of an additional transmission and a third differential between two standard rear axles.

Bates Re-elected Reo President

Don E. Bates, re-elected president of Reo at the directors' meeting recently, took over the additional duties of general manager. Other officers re-elected were: R. E. Olds, chairman of the board; G. E. Smith, vice-president; Ray DeVlieg, vice-president and works manager; George L. Brown, secretary and treasurer; D. M. Parsons, assistant secretary and treasurer.

Mench Joins IHC

E. L. Mench, Jr., is now with the International Harvester Co., Chicago, as assistant transportation engineer.

N. Y. Show Opens Nov. 2

At the last meeting of its directors the Automobile Manufacturers Association authorized the renting of Grand Central Palace for the New York Automobile Show scheduled to open on November 2.

See Page 91 for Additional News

March Sales Up 22% Production Up 23%

Registrations Put at 41,500; Output Totals 71,813

Registrations of new trucks during March amounted to approximately 41,500 as compared with 33,884 a year ago and 34,797 during February, 1935, according to estimates based on returns from 27 states. Actual returns from the 27 states are 18,499 as against 15,141 for the same states during 1934, a gain of approximately 22 per cent.

Truck production in March totals 71,813 units, exceeding March, 1934, by 13,380 for a 23 per cent increase. March has the best production rate for that month since 1929 and is second highest for the month in the history of the industry. It was exceeded only by March, 1929, when 79,587 units were produced.

Lawrence Succeeds Loomis on Truck Code Authority

John V. Lawrence has been appointed to succeed Edward F. Loomis (resigned) as secretary and assistant treasurer of the national code authority for the trucking industry and as general manager of the American Trucking Associations, Inc. His old posts as assistant secretary and assistant manager will be filled by Carl F. Jackson, manager of the Rates and Tariffs Division of the code authority.

John V. Lawrence

Steinko Joins Ray Day

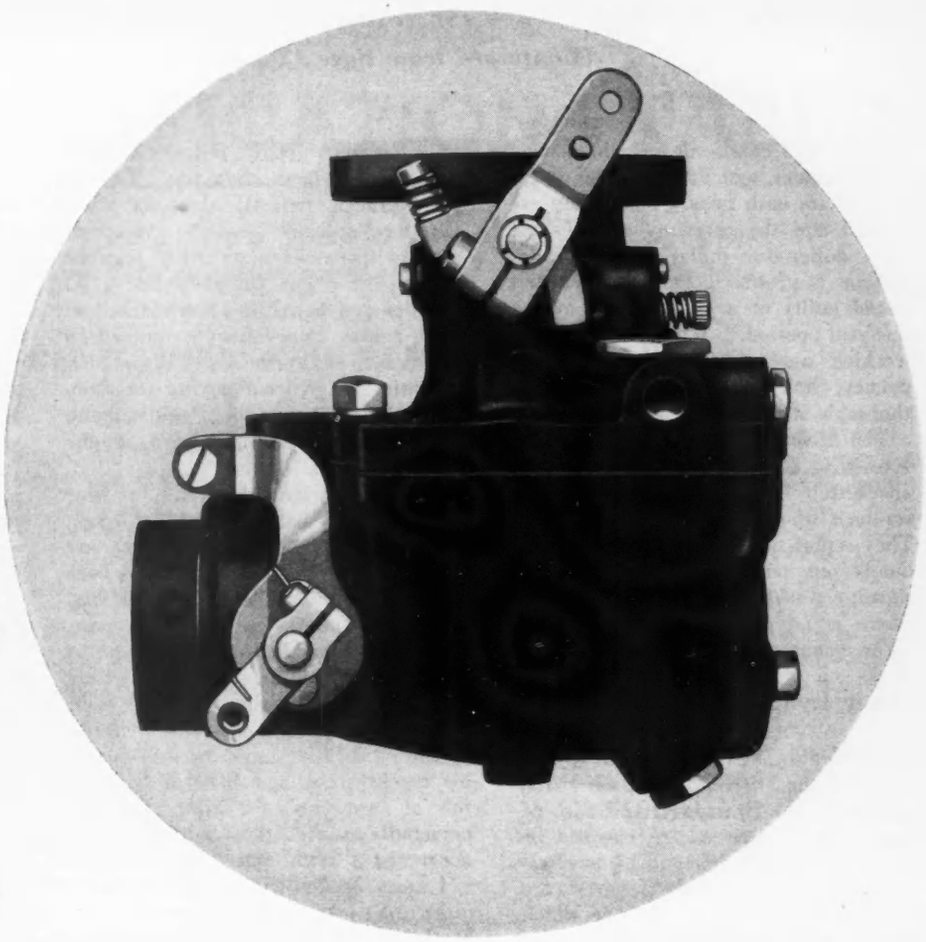
J. Truman Steinko has been appointed sales promotion manager for the Ray Day Piston Corp., according to an announcement from Ray E. Day, president.

Green Joins Herb Smith

E. F. Green is chief engineer with the Herb Smith Equipment Corp., Rochester, N. Y.

Autocar Shifts and Changes

W. W. Smith has resigned as manager of the Autocar branch in Buffalo, N. Y. That branch has been merged into the Northern New York district under L. E. Harmon, district manager. Headquarters are at Albany. George B. Wilkins will conduct sales at the Buffalo and Syracuse branches. E. B. Sinclair has been appointed manager of the company's public works department in New York.



This famous heavy-duty Stromberg Model "SF" gives your overhaul work a chance!

AN engine overhaul is supposed to show some results besides quiet tappets and good compression. Yet there's many a job put back into service with very little else to prove that it's been overhauled.

Look to the *carburetor!* There's where fuel mileage begins. Unless carburetion is right, the most painstaking work on pistons, rings, valves and bearings can't restore full power, pep and economy in an engine.

Carburetors wear out. Air intake and mixture outlet valve pivots develop play. Uncontrolled air volume results. Venturi openings enlarge through friction—believe it or not! And when a carburetor gets in that condition, nobody can make it stay in adjustment.

Re-carburetion, with the famous Stromberg Heavy-duty Model "SF", is the perfect answer—certified by thousands of owners. Stromberg, pioneer of a score of great carburetion advancements, provides a replacement unit that gives your other overhaul work a chance. The cost is low—and is quickly repaid by better fuel economy, power, pickup and ease of starting.

Stromberg series "SF" Carburetors follow the only principle of carburetion which has proved continuously successful for all heavy-duty work. This unit will perfectly handle all present-day high speed, heavy-duty engines, regardless of size or speed. Built in 5 sizes: 1", 1¼", 1½", 1¾" and 2". Moderate price. Available with or without accelerating pump and Vacuum Economizer, and usable with or without governors.

BENDIX PRODUCTS CORPORATION
(Stromberg Carburetor Division)
401 Bendix Drive South Bend, Indiana

STROMBERG CARBURETORS

A BENDIX PRODUCT

SPOTTING DRIVERS

(Continued from Page 12)

the case and hands out the punishment. The penalties, with the exception of dismissal, are cash fines. These fines are pooled and the company matches the fines dollar for dollar and the total amount is pro-rated among drivers not found guilty of a violation for over a one-year period. While there is no working agreement with any outside agency, any outside report receives thorough attention.

The drivers of the **Humble Oil & Refining Co., Houston, Tex.,** are checked by the various transportation foremen who travel no regular routes. They report to the superintendent, who hands out penalties in the form of warnings, suspensions and discharges. There is no agreement with any law enforcement agency but the company works closely with all such bodies. **Oscar Lynch** supplied the facts.

FROM old **New Orleans** at the mouth of the Mississippi **H. C. Ford** reports for the **Standard Oil Co. of Louisiana.** Drivers are checked by sales agents, salesmen and by mechanical inspections. The reports are handled by a Safety Committee which recommends punishment to the division manager. A complete driving record is placed before the committee to aid in its decision. Punishment, starting with reprimands, ranges through layoffs to dismissal. No agreement is in effect with any outside agency.

On the other hand **Thos. J. Spellman** tells us that the drivers of the **Cities Service Refining Co., Boston, Mass.,** are checked by company and insurance agents. Both types of inspectors report to the transportation superintendent. The inspectors have no routine for their work. Penalties are reprimand and time off without pay and in a few cases dismissal. The inspection is done entirely by the sources mentioned.

Clarence J. Martin, Superintendent Motor Transportation, Phillips Petroleum Co., Bartlesville, Okla., has two assistants who spend much of their time on inspection work. These men report to the division manager. Accidents are analyzed by a court consisting of operations manager, mechanic, insurance representative and plant supervisor. The driver, if he is responsible, is assessed all or a portion of the cost of the accident. The insurance carrier's inspector supplements the efforts of the company inspectors.

The **Mid-Continent Petroleum Corp., Tulsa, Okla.,** does not employ "spotters." **R. F. Fike, General Superintendent, Motor Transport Department,** depends upon gasoline mileage records, governors and the dispatcher's record to regulate the drivers. The company has a set of rules and penalties for violations of these rules. Punishment is applied by dispatchers or by the chief dispatcher. Penalties range from paying for damage, in case of an accident, to dismissal. It has been found necessary to discharge only one driver.

When **Clyde Adams, Fleet Manager** of the **Rubel Corp., Brooklyn, N. Y.,** travels from one garage to the other he watches his beer and ice trucks like a hawk. He employs no "spotters," believing that once their identity is known their value is lost. He has spent a great deal of time cultivating the acquaintance of the state police officials and city police heads of the cities and states through which his trucks pass, and they do a good job of "spotting" for him. He has personally enlisted their help and their efforts have been extremely valuable.

Larus & Brother Co., manufacturer of tobacco (Edgeworth), of **Richmond, Va.,** reports through **A. Carlson** that it depends upon division managers to check drivers. Minor infractions may be handled with a warning but carelessness or neglect may result in dismissal.

HIGHWAY transportation companies follow the practice of picking their best driver and making a road inspector out of him. **William Clark, Horlacker Delivery Service, Philadelphia,** took his best driver after 10 years' experience with the company and gave him the job of keeping other drivers in line. This inspector does not live in Philadelphia. He calls Mr. Clark just before he is to start out and at that time finds out where he is to go. Sometimes he trails drivers, sometimes he rides with them and sometimes he irons out wrinkles at transfer points. The drivers know him and what he is supposed to do. Severe penalties are very seldom necessary. Clark hands them out when necessary. The **Brashear Truck Co., St. Louis, Mo.,** follows much the same system. The driver, before he took on his new work, was a top hand. He knows what the company expects and reports any departures from this practice.

McBride Brothers, Goshen, N. Y., also has a former top driver looking after the others. He is 6 ft. 2 in. tall and weighs roughly 200 lb. He handles all violations himself. He reports to the office on the trucks that occupy his time during the day, and the good or bad reports are filed for future reference. His work is supplemented by an insurance inspector.

M. L. Adley, vice-president, Adley Express Co., New Haven, Conn., depends entirely upon an insurance service spotting personnel and finds it adequate. Drivers who answer unfavorable reports or account for accidents have to tell it to the company attorney who may suspend or dismiss them.

A new system of checking drivers is being installed at the **Fort Wayne Central Union Truck Terminal Inc.,** with the result that **E. Williams,** president, is not in position to give out any information at this time.

DRIVER conduct has received much attention of **Barnwell Brothers, Burlington, N. C.,** and several methods of checking it have been tried, according to **J. A. Barnwell,** Secretary and Treasurer of the company. At present the company has inspectors who ride the trucks constantly and check in daily for instructions. The drivers know who they are but since the inspectors receive their assignments daily no driver knows when or where to expect them. In case of intoxication the inspector takes the driver's place. Punishment is not part of the inspector's job. Wherever possible the company attempts to reason with the guilty driver because replacements are expensive. The exact nature of the punishment depends upon the driver's record and the type of individual he is. There is no agreement with any outside agency. The company believes it fosters feeling against police officers and drivers.

John J. McCarthy, of John J. McCarthy Motor Freight Service, Taunton, Mass., says that drivers may pay for accidents or get forced vacations without pay or be dismissed if guilty of violations. Six solicitors, terminal men and company officials do the checking. No agreements with outside agencies have been made.

L. E. Beemer, Manager, Roadway Transit Co., Inc., Detroit, Mich., sends roadmen out with relief drivers to check regular drivers. Insurance company inspectors are the only outsiders who report on Roadway drivers. Reports may cause drivers to be warned, to be laid off for a week or to be discharged.

COMMERCIAL CAR JOURNAL'S

TRUCK SPECIFICATIONS TABLE

The Commercial Car Journal's Truck Specifications Table is brought up to date in each issue from data supplied monthly by truck manufacturers

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KEY TO ABBREVIATIONS AND REFERENCE MARKS

GENERAL

Chassis Price—Chassis price quoted applies to the standard wheelbase and specifications listed. All prices are F.O.B. factory.
•••—List price not yet established. Ready next issue.
Tonnage Rating—Where a spread of ratings is given the maximum ratings are for ideal operating conditions and the minimum for extremely difficult conditions; the ranges between are for varying operating conditions.
Gross Vehicle Weight—Is chassis weight, plus body and cab, plus payload. Gross vehicle weight given for a model is based on maximum recommended tire size and not on tires listed as standard equipment.
Chassis Weight Stripped—Includes gas, oil and water and all things included in chassis price. Does not include the weight of cab.
Maximum Brake H. P. at Given R.P.M.—Is actual dynamometer reading without accessories.
Tractors—Unless given the designation N (meaning not available as tractor), all standard models may be assumed to be available as tractors.
(A) All Torque and Brake Horsepower values listed are based on engine outputs with all Standard Equipment Accessories running and are the same values obtaining with the truck on the road in actual operation.
(N) Not available as tractor.
(T) This designation accompanying a model number indicates vehicle is specifically designed for tractor use only.
c. o. e.—Cab-over-engine design.
(3) **Corbitt**—Larger engines and corresponding auxiliary units provided on all models at extra cost.
(4) **Day Elder**—Model 75—1½ ton—same specifications except price—$945, and larger tire size—B6.00/20 front and DB6.00/20 rear.
(5) **Dodge**—F-61 available as special tractor truck with 146-inch wheelbase with model designation of F-60, at $2645. K-61 available as special tractor truck with 146-inch wheelbase with model designation of K-60, at ***.
(5a) **Dodge**—Model H20, ¾-1 ton, gross vehicle weight 6,000 lb., price $502, has same specifications as H30 except tires which are 7.50/17 and lighter rear springs.
(6) **General Motors**—Model T-16L, ¾-ton, same as T-16 except light riding springs, smaller tires and 4.57 to 1 gear ratio. Models T-18 to T-61 inclusive are also available for export only as coach chassis. Dual performance axle at extra cost in Model T-18. Double reduction axles optional at extra cost in Models T-43, T-46, T-46H, T-51, T-73H and T-74. Worm type axles optional at price deduction in Models T-61, T-75T, T-75, T-75H and T-83. Chassis prices and weights on all cab-over-engine models include the cab. A complete line of superheavy duty models designated T-85 series (4-wheel) and T-95 series (6-wheel) custom-built to exactly meet customer's requirements are available with a range of axles, wheelbases, engines, transmissions, etc., and prices will be quoted upon application.
Gramm—Larger engines and corresponding auxiliary units provided on all models at extra cost when type of service demands. Wheelbases and body mounting dimensions may change to suit special requirements. Double reduction axles available on all models except AX and BX.
Series CXH is supplied with Hercules JXB engine in Model CXHB and Hercules JXC in Model CXHC.
(8) **International Harvester**—A-1, ¼ ton, same as A-2 except less spring leaves and smaller tires. Model C-10, ½-ton, same as C-20 except less spring leaves.
(9) **Le Moon**—Model 600 available with Lyc. AEC at same cost. Models 701 and 801 available with Waukesha 6SRL at same cost.
(10) **Sterling**—Rocker arm used in place of springs
(D) **Sterling**—Diesel Equipped.
†**Reo**—Model 1D is the longer wheelbase edition of Model 1B. The frame dimension is 7x2¾x⅛. It is furnished at extra cost.
††**Reo**—2J, 2K same as 2H except 166 in. wheelbase and price of $1695.
††**Reo**—3J same as 3H except wheelbase of 170 in. and price of $2085; 3K same as 3H except 185 in. wheelbase and price of $2155. 3M same as 3H except 205 in. wheelbase.
(11) **Studebaker**—S-2 in 141 in. and 165 in. wheelbases has 6⅜ in. frame depth.
(12) **White**—Each model shown is furnished with different specifications for different tonnage ratings.
•—Factory governed speed 2400 r.p.m.
(12a) **White**—Special prices for each installation.
(13) **Marmon-Herrington**—Available with Hercules Diesel engine. Price on application.
(14) **Ford**—Rear axle ratios 5.14 and 6.6 optional on 1½-ton trucks.
(15) **Mack**—Chassis price and weight include cab.
(16) **Biederman**—Will furnish Continental, Hercules, Waukesha and Lycoming engines at the buyer's option.
(17) **Moreland**—All Moreland models available with Waukesha engines and as six-wheelers with dead axle.
(18) **Walker**—Frame lengths may be changed, within limits, to suit individual requirements, at no additional cost.
(19) **Available**—Models WS125, WS240 and WS300 are available as cab-over-engine types.

MAKES—ALL

AB—American Bosch.
A LaF—American La France.
AL—Auto Lite.
B—Bendix.
BB—Borg & Beck.
BL—Brown-Lipe.
BO—Bendix front, Own rear.
Blo—Blood.
Bri—Briggs.
Bu or Bud—Buda.
BW—Borg Warner
BWs—Bendix front, Westinghouse rear.
C or Col—Columbia.
Car—Carter.
Ch—Chicago.
CI—Ignition by compression.
Cl or Cla—Clark.
Cle—Cleveland.
Co—Covert
Con—Continental.
Cot—Cotta Gear.
Cum—Cummins-Diesel
Det—Detroit Lubricator.
DG—Detroit Gear and Machine.
DR—Delco Remy.
Eat—Eaton.
Ei—Eisemann.
En—Governor built in engine
EV—Electro-Vac (gov.) Pierce
Fe—Fedders.
Fu—Fuller.
Ge—Gemmer.
GO—G. & O.
Ha—Handy (governor).
Ha—Hannum (steering gear).
HaS—American Car & Fdry.
Her—Hercules.
Hr—Harrison.
HS—Merchant & Evans (clutch).
HS—American Car & Fdry. (governor).
Jac—Saginaw.
Jo—Jones.
KP—Handy.
L—Lockheed.
Le—Leibing
Li—Lipe, W. C.
LN—Leece Neville.
Lo—Long.
LO—Lockheed front, Own rear
LW—Lockheed front, Wisconsin rear.
Lyc—Lycoming.
Mc—McCord.
Ma—Marvel.
ME—Merchant & Evans.
MM—Mechanics Mach.
Mo—Modine (radiator).
Mo—Monarch (governor).
My—Mallory.
NE—North East.
No—Not supplied.
ns—No Standard.
O or Ow—Own.
Op or Opt—Optional
Pe—Pierce (governor).
Pe—Perfex (radiator).
PS—Peters & Snead.
RB—Robt. Bosch.
Ro—Rockford.
Ros—Ross.
Sc—Scintilla.
Sch—Wheeler-Schebler.
Shu—Shuler.
SpB—Spicer and Blood
Spi—Spicer.
Ste or St—Sterling.
Sto.-Bat.—Storage Battery
Str—Stromberg.
Til—Tillotson.
T or Tim—Timken.
TWH—Timken Wisconsin Herrington
WG—Warner Gear.
Wa—Waukesha (governor).
Wau—Waukesha.
W or Wis—Wisconsin.
Ws—Westinghouse.
Yo—Young
Zen—Zenith.

BRAKES—SERVICE

Location

2—Two Wheels, rear only.
2/4—Two-wheel brakes effective on all four wheels through driveshaft.
4/6—Brakes on four rear wheels effective on all wheels through driveshaft.
T/4—Brake on transmission effective on all four wheels through driveshaft.
4—Four Wheels, front and rear
4r—Four Wheels, rear only.
6—Six Wheels, front and rear.
J—Jackshaft.
P—Propeller shaft.

Type

I—Internal.
X—External.

Operation

A—Air.
D—Hydraulic and mechanical.
H—Hydraulic.
M—Mechanical.
V—Vacuum.

BRAKES—HAND

Location

C—Center of double propeller shaft.
2—Rear wheels.
4—Four wheels.
R—Worm or bevel gearshaft.
T—Transmission.
F—Driveshaft.

Type

D—Tru-Stop disk.
I—Internal.
X—External.

BRAKE DRUMS

Material

a—Cast alloy iron.
A—American Car Fdry.
C—Centrifuse.
D—Dayton.
E—Ermalite.
G—Gunite.
H—Hunt Spiller.
c—Cast iron.
p—Pressed steel.
p—Pressed steel.
s—Cast steel.
(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

CLUTCH

Type

D—Multiple disk.
dp—Double plate.
O—Plate in oil.
P—Single plate.

ENGINE

Valve Arrangement

F—Inlet valve in head; exhaust valve at side.
H—In head.
L—"L" head, valves at side.
T—Inlet and exhaust on opposite sides.

Camshaft Drive

C—Chain.
G—Gear.

Piston Material

A—Aluminum alloy.
B—Semi-steel.
C—Cast iron.
N—Nickel iron.
S—Aluminum alloy with strut.

Main Bearings

r—Rear main bearing.

Oiling System

CC—Pressure to main, connecting rod and camshaft bearings.
FP—Pressure to main, connecting rod camshaft bearings and piston pins.
PC—Pressure to mains and connecting rod bearings.
PG—Pump, gravity and splash.
PS—Pressure with splash.

FRAME

Type

I—"I" Beam.
C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center.
Tf—Tapered front.
X—x-Braced.

FUEL SYSTEM

Fuel Feed

E—Electric pump.
G—Gravity.
M—Mechanical pump.
P—Pressure.
V—Vacuum.
B—Bosch.
C—Cummins.

REAR AXLE

Final Drive and Type

B—Bevel.
C—Chain.
D—Dead.
F—Full-floating.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
w/2—Worm or Double Reduction Optional.
½—Semi-floating.
¾—Three-quarter floating.

Drive and Torque

A—Radius Rods and Torque Arm.
H—Hotchkiss. (springs)
R—Radius Rods
T—Torque Arm.
U—Torque Tube.

SPRINGS

Auxiliary Type

½—Semi-elliptic above or below main springs.
¼—Quarter elliptic.
C—Coil spring.
N—No.
O—Optional.

TIRES

B—Balloon.
DB—Dual Balloons.
P—High Pressure Pneumatics.
DP—Dual High Pressure Pneumatics.
S—Solids.
DS—Dual Solids.
°—Pneumatics at extra cost.

TRANSMISSION

Location

A—Amidships.
J—Unit with jackshaft.
U—Unit with engine.

Auxiliary Location

No—Not furnished.
O2—2 speed axle unit optional at extra cost.
Op—Optional at extra cost.
A—Amidships.
R—Rear of amidships main transmission.
U—Unit with engine.

WHEELS DRIVEN

2C—Center pair of rear wheels
2R—Rear pair of rear wheels.
4F—Front and center pair of rear wheels.
4R—Four rear wheels.
6—Six wheels.

Specifications Are for New Models Announced This Month – A Complete

NOTICE—The policy of Commercial Car Journal now is to publish complete specifications of all current truck models in the January, April, July and October issues. These quarterly listings correspond to the big seasonal truck buying periods.

In the intervening months will be published the specifications of all new models that are brought out. (Just as you see

Line Number	MAKE AND MODEL	GENERAL (See Keynote)						TIRE SIZE		ENGINE		TRANSMISSION			REAR AXLE					FRAME	
		Tonnage Rating	Chassis Price	Standard Wheelbase	Max. W. B. Furnished	Gross Vehicle Weight	Chassis Wt. (Stripped)	Front	Rear	Make and Model	No. of Cylinders, Bore and Stroke	Make and Model	Location, Forward Speeds	Aux. Location and Speeds	Make and Model	Gear and Type	Drive & Torque	GEAR RATIOS In High	GEAR RATIOS In Low	Side Rail Dimensions	Type
1	Federal.....28	2½–3½	1415	136	195	15500	4800	B7.00/20	DB7.00/20	Her JXC	6–3¾x4¼	Cla 200V	U 5	Op	Tim 56200H	SF	H	6.16	46.8	8½x2 7/16x½	T
2	Indiana.....20DR	3½	5250	170	224	22000	8100	B9.00/20	DB9.00/20	Her DRXB	6–4⅜x5¼	BL 5341	U 4	No	Wis 1337W	2F	R	7.27	48.2	8½x3x⅞	T
3	.....49DR	5–7	7350	188	224	28000	10500	B10.50/20	DB10.50/20	Her DHXB	6–5x6	BL 7351	A 5	No	Wis 1910W	2F	R	7.16	45.0	8x3x⅜	T
4	Reo.....1B4-1D4	1½–2½	685	139	166	11500	3298	B6.00/20	P32x6	Own	6–3⅛x5	Own	U 4	O 2	Own	SF	H	5.28	34.8	7¼x2¾x½	C
5	.....2B4R-2D4R	2½–3	1008	142	166	14500	.....	B7.00/20	DB7.00/20	Own	6–3⅜x5	Own	U 4	O 2	Own	SF	H	5.83	38.4	7x3x¼	C
6	.2HR (2JR-2KR)	2½–4	1680	142	184	17000	.....	B7.50/20	DB7.50/20	Own	6–3⅜x5	Own	U 4	No	Own	2F	H	7.1	46.8	7x3x¼	C
7	.3HR (3JR-3KR)	2½–5	2490	153	205	19500	.....	B8.25/20	DB8.25/20	Own	6–3⅜x5	BL	U 5	No	Own	2F	H	8.5	52.0	8¼x3x¼	C
8	Schacht.....12B	2	1195	132	177	12200	4900	P32x6	DP32x6	Her JXB	6–3⅜x4¼	Own	U 4	...	Tim	SF	H	Opt	Opt	8x3x½	C
9	.....18B	2½–4	1895	124	175	15000	5200	B8.25/20	DB8.25/20	Her JXD	6–4x4¼	Fu 5A290	U 5	No	Tim	BF	R	5.83	40.6	8x3x½	C
10	.....20B	3–4½	2095	124	188	17500	5400	B9.00/20	DB9.00/20	Her JXD	6–4x4¼	Fu 5A290	U 5	No	Tim	BF	R	7.4	45.1	8x3x½	C
11	.....25B	3½–5	2595	146	199	19500	5750	B9.75/20	DB9.75/20	Her WXC2	6–4½x4½	Fu 5A380	U 5	No	Tim	BF	R	7.4	51.8	8x3x¼	F
12	.....28B	4–5½	2895	146	199	23000	6600	B9.75/20	DB9.75/20	Her WXC3	6–4¼x4½	Fu 5A380	U 5	No	Tim	BF	R	7.8	54.6	8x3x¼	F

Makers' Corrections of Specifications Published in April

AVAILABLE—Model **W-170**—governor make now No. Models **W-210, W-240**—clutch make and type now P.BB. **Model W-400**—hand brake location now TD.

BROCKWAY—Model **78**—chassis wt. now 3950. **Model 87**—chassis wt. now 4300. **Model 90X**—chassis wt. now 4545. **Model 96**—chassis wt. now 5075. **Model 110**—chassis wt. now 5435. **Model 125X**—chassis wt. now 5500. **Model 130**—chassis wt. now 6000. **Model 145**—chassis wt. now 6150. **Model 150X4**—chassis wt. now 6235. **Model 150X5**—chassis wt. now 6300. **Model 78**—cylinder bore now 3 3/16 in. **Model 125**—compression ratio now 4.6. **Model 120**—piston displacement now 203; max. brake hp. now 85 at 2500. **Model 140**—piston displacement now 203; max. brake hp. now 85 at 2500. **Model 141**—piston displacement now 203; max. brake hp. now 85 at 2500.

CHEVROLET—**Utility,** 157 in. whlbse.—chassis price now 515; chassis wt. now 3040. **Utility,** 131 in. whlbse.—chassis wt. now 3000. Comm'l-Chassis wt. now 2135.

FAGEOL—**Models 370D, 370RA-D, 470D, 685RD**—transmission make and model now BL 7341.

FEDERAL—**Model 30** now **Model 28. Model 25**—transmission make and model now Cla185F.

GENERAL MOTOR—**Model T-16**—chassis wt. now 3250. **Model T-18**—chassis wt. now 3620. **Model T-23**—chassis wt. now 4250.

HUG—**Models 15A, 15D, 15T**—frame side rail dimensions now 8 x 3 x ¼.

INDIANA—**Model 86**—tonnage rating now 1½-2.

MACK—**Model BX-S**—chassis price now 6100; gear ratio in high now 8.92; gear ratio in low now 62.8; front axle now own BX; cab to rear of frame now 210. **Model AK,** 6-8 ton—chassis price now 6800; service brake lining area now 781. **Model AK,** 5-7½ ton—service brake lining area now 724. **Model BQ**—service brake lining area now 781.

REO—**Model 1B4R-1D4R**—tonnage rating now 2-2½; gross vehicle wt. now 11500; service brake lining area now 255; hand brake location now TX. **Models 2B4, 2D4**—tonnage rating now 2-3; gross vehicle wt. now 13500; hand brake location now TD; cab to rear of frame now 102½; cab to rear axle now 60½. **Models 2H (2J-2K)**—tonnage rating now 2-4; gross vehicle wt. now 16000; hand brake location now TD. **Models 3H (3J-3K-3M)**—tonnage rating now 3-5; gross vehicle wt. now 18500; cab to rear of frame now 105⅝; std. whlbse. now 153. **Model 4H** 4-6; gross vehicle wt. now 21000. **Models 1A-4, 1C-4**—gross vehicle **(4J-4K-4M)**—tonnage rating now wt. now 9500; hand brake location is TX. **Model S4P**—hand brake location is TX.

SCHACHT—**Models 10B, 15B**—carburetor make now Zen. Eliminate **Models 20HA, 25HA, 28HA.**

STERLING—**Model FB 50** Del.—chassis price now 1905. **Model FB 60** Del.—chassis price now 2055. **Model FB 70** Del.—chassis price now 2305. **Model FB 80**—chassis price now 2915. **Model FD 90**—chassis price now 3175. **Model FD 115**—chassis price now 5225. **Model FD 97**—chassis price now 4825. **Model FC 100**—chassis price now 4375. **Model FC 135**—chassis price now 4905. **Model HC 140**—chassis price now 5295. **Model HC 170**—chassis price now 7175. **Model FD 97 D**—chassis price now 7155. **Model FD 97 H**—chassis price now 7985. **Model FD 115 D**—chassis price now 7565. **Model FD 115 H**—chassis price now 8220. **Model FC 100 D**—chassis price now 7135. **Model FC 100 H**—chassis price now 7965. **Model HC 140 D**—chassis price now 7800. **Model HC 170 H**—chassis price now 9345.

WHITE—**Model 702A**—tonnage rating now 2-3.

FOUR-WHEEL DRIVES

WALTER—**Model FN**—compression ratio now 6.5. **Model FM**—compression ratio now 5.0. **Model FCKD**—compression ratio now 5.0.

Listing of All Trucks in Current Production Will Be Given in July

them printed on this page.)

In addition, so that there may be a public record available at all times of the minor changes made in current models, these changes will be published monthly as shown below.

The next complete specification listing will appear in Commercial Car Journal's July number. Correspondence on the policy is requested.

Line Number	ENGINE DETAILS: Displacement	Comp. Ratio	Torque lb. ft.	A.M.A. Rated H.P.	Max. Brake H.P. at R.P.M. Given	Valve Argmt.	Camshaft Drive	Piston Material	MAIN BEARINGS: Number and Diameter	MAIN BEARINGS: Length	Oiling System Type	Governor Make	FUEL SYST.: Carburetors Make	FUEL SYST.: Fuel Feed	ELECTRICAL: Ignition System Make	ELECTRICAL: Generator, Starter Make	Clutch Type and Make	Radiator Make	Universals Make	FRONT AXLE: Make and Model	Steering Gear Make	BRAKES: SERVICE: Make Location Type Operat'n	BRAKES: SERVICE: Lining Area	BRAKES: SERVICE: Drum Material	BRAKES: Hand Location Type	BODY MOUNTING DATA: Cab to Rear of Frame	BODY MOUNTING DATA: Cab to Rear Axle	BODY MOUNTING DATA: Width of Frame	SPRINGS: Front	SPRINGS: Rear	SPRINGS: Auxiliary Type
1	282	5.4	176	33.7	73–2600	L	G	A	7–2½	10⅜	PC	Mo	Zen	M	DR	DR	P.BB	Lo	Spi	Tim 31000H	Ge	L4IHV	336	a	FD	101	56¾	34	38x2½	50x3	½
2	474	...	350	45.9	125–2200	H	G	C	7–3	13¼	CC	Her	No	M	CI	LN	P.BL	Yo	Spi	Shu 15583B	Ros	W4IA	540	G	CD	142	83	34	40x2½	54x3	..
3	707	...	530	60.	176–1800	H	G	C	7–3¼	17	CC	Her	No	M	CI	LN	dp.BL	Yo	Spi	Shu 1633W	Ros	W4IA	560	G	CD	144	89⅜	34	40x3	54x3	..
4	230	5.4	152	23.4	68–2800	L	C	A	7–2⅝	10⅝	CC	No	Car	M	AL	AL	P.BB	Fe	Cle	Own	Ros	L4IH	246	C	TX	99½	57½	34	36x1¾	48x2¼	O
5	268	5.5	175	27.3	75–2800	L	C	A	7–2⅝	10⅝	CC	No	Car	M	DR	DR	P.BB	Fe	Cle	Own	Ros	L4IH	289	a	TX	102½	60½	34	36x2¼	50x2½	½
6	268	5.5	175	27.3	75–2800	L	C	A	7–2⅝	10⅝	CC	No	Str	M	DR	DR	dp.Lo	Mc	Cle	Own	Ros	L4IH	349	a	TX	105¼	60½	34	40x2½	54x3	½
7	309	5.0	200	31.5	85–2800	L	C	A	7–2⅝	10⅝	CC	No	Str	M	DR	DR	dp.Lo	Mc	Cle	Own	Ros	L4IHV	399	a	FD	105⅝	60⅝	34	44x3	54x3½	½
8	263	5.4	164	31.5	68–2800	L	G	A	7–2½	10⅛	PC	No	Str	M	AL	AL	P.BB	Yo	Spi	Tim	Ros	L4IH	380	G	TX	Opt	Opt	31½	45x2½	50x3	½
9	320	5.3	204	38.4	84–2800	L	G	A	7–2½	10⅛	PC	Mo	Zen	M	AL	AL	P.BB	Yo	Spi	Tim	Ros	L4IHV	527	G	TX	Opt	Opt	31½	46x2½	50x3	½
10	320	5.3	204	38.4	84–2800	L	G	A	7–2½	10⅛	PC	Mo	Zen	M	AL	AL	P.BB	Yo	Spi	Tim	Ros	L4IHV	578	G	TX	Opt	Opt	31½	46x2½	50x3	½
11	360	4.7	238	40.3	85–2400	L	G	A	7–2⅝	13½	PC	Mo	Str	M	AL	AL	D.Fu	Yo	Spi	Tim	Ros	L4IHV	578	G	TD	Opt	Opt	31½	46x2½	50x3	½
12	383	4.4	265	43.3	106–2800	L	G	A	7–2⅝	13¼	PC	Mo	Str	M	AL	AL	D.Fu	Yo	Spi	Tim	Ros	L4IHV	658	G	TD	Opt	Opt	31½	46x2½	50x3	½

Model FCS—compression ratio now 5.0. **Model FBS**—compression ratio now 5.0. **Model FBRS**—compression ratio now 5.0.

SIX-WHEELERS

FAGEOL—Models 8-46 HP 4R, 8-46AL 4R, 846 AL-D 4R, 10-46RB 4R, 10-46 AL 4R, 10-46AL-D 4R—transmission make and model now **BL 7341.**

MACK—Model AK 4R—chassis price now 9350. **Model BQ**—service brake lining area now 1065.

STERLING—Model FBT130—chassis price now 4105. **Model FDT180 2C**—chassis price now 7535. **Model FDT200 2C**—chassis price now 7920. **Model FDT250 2C**—chassis price now 8940. **Model FCT180 2C**—chassis price now 7475. **Model FCT200 2C**—chassis price now 7645. **Model FCT250 2C**—chassis price now 9115. **Model HCS-210 4R**—chassis price now 10820. **Model FDT180D 2C**—chassis price now 9865. **Model FDT200D 2C**—chassis price now 10255. **Model FDT250D 2C**—chassis price now 11110. **Model FDT250H 2C**—chassis price now 11110. **Model FCT180D 2C**—chassis price now 9810. **Model FCT200D 2C**—chassis price now 9985. **Model FCT-250D 2C**—chassis price now 11285. **Model FCT250H 2C**—chassis price now 11285. **Model HCS210H 4R**—chassis price now 12990.

1935 Service Show in Atlantic City

The 1935 Automotive Service Industries Show will be held in the Auditorium at Atlantic City, N. J., Dec. 9 to 13 inclusive, according to decision of the Joint Operating Committee at its initial meeting in Atlantic City last month.

The show will be sponsored jointly by the Motor and Equipment Manufacturers Association, Motor and Equipment Wholesalers Association, and National Standard Parts Association.

McDaniel Named Fostoria Sales Manager

Appointment of C. W. McDaniel as general sales manager is announced by The Fostoria Pressed Steel Corp.

The company also announces it has acquired the commercial manufacturing and selling rights for Blue Rock Tite-Seal products under the patents applied for by the U. S. Army Air Corps and those issued to the Blue Rock Chemical Corp., of Dayton. An intensive selling campaign is being planned.

New Truck Registrations by Makes by Months

	Autocar	Brockway	Chevrolet	Diamond T	Dodge	Federal	Ford	G. M. C.	International	Mack	Reo	Sterling	Stewart	Studebaker	White-Indiana	Miscellaneous	Total
January.....1935	71	86	9,867	550	5,141	152	13,260	858	3,513	114	380	10	42	127	308	280	34,759
January.....1934	79	91	8,917	406	2,581	120	6,650	555	2,284	161	289	9	61	98	284	318	22,903
February.....1935	41	54	11,701	499	3,271	113	14,330	570	3,174	63	292	10	34	107	217	321	34,797
February.....1934	58	81	10,718	420	2,723	121	6,459	453	2,150	144	339	14	60	109	357	270	24,476
2 Months.....1935	112	140	21,568	1,049	8,412	265	27,590	1,428	6,687	177	672	20	76	234	525	601	69,556
2 Months.....1934	137	172	19,635	826	5,304	241	13,109	1,008	4,434	305	628	23	121	207	641	588	47,379
2 Months.....% Gain	−18	−19	10	27	59	10	101	43	51	−42	7	−13	−37	13	−18	2	47

− = Decrease

SHOPMEN SOLVE SYNTHETIC KINKS

(Continued from Page 15)

applied, there will be very little peeling.

Primers are more important than they are often given credit for being. They are the foundation of the painting job, and responsible for the success of finishing coats and the tightness of the bond between the surface and final coats. If you want to take a tip from us, don't be carried away by claims of extra fast drying. Good flexibility and good bonding properties count for a great deal more, and we have found that too rapid drying primers often have a shorter life and consequently affect the life of the whole job.

One trick we have learned in applying primers is to spray on a light coat —just sufficient to give good coverage. Too heavy a coat of primer effects satisfactory adhesion of succeeding coats. We let the primer dry overnight, and spot-putty all surface depressions in the wood or metal the following morning. Bad jobs requiring thick applications of putty may require up to 24 hours for drying before sanding.

WE put on two coats of surfacer in order to have plenty of material on the surface to sand the job down smooth. The surfacer is allowed to dry overnight before it is wet or dry sanded. Finer sandpaper may be slower, but it avoids the coarse scratches that might otherwise stick through the final coats of synthetics. We use number 320 for most work. After the sanding operation we apply the first mist coat of synthetic and follow it almost immediately with a full wet coat. After this has had a chance to dry dust free, we apply a third coat.

If you're using decals or japan colors for lettering, you can apply them after overnight drying without fear. But don't try to do a gold leaf job that soon. Depending upon the drying conditions we allow the synthetics to air-dry up to forty-eight hours to avoid any danger from the chalk or whiting.

THOUGH one advantage of synthetics is the fact they dry to a rich, full, lustrous finish without polishing or the application of varnishes to bring up the gloss, we give all except the white jobs a full coat of pale finishing varnish. This adds considerably to the life and durability of the paint job.

When it comes to touch-up work, you may have found as we did formerly, the only way to dodge a "cut-in" appearance is to do the whole door or whole panel over. Well, we've found you can do a good touch-up job that will save plenty of trouble and expense by feather edging around the patch by wet-sanding with naphtha. The naphtha will not soften the surface and acts as a sort of lubricant. Then take some enamel and spray the area to be touched up. You'll find you can get a spot repair that won't weather off color, or cut-in or lift the undercoats.

TOUCH-UP JOB

By Edward Chadwick, General Supt. of Garage, Little Falls Laundry, Little Falls, N. J.

LAUNDRY trucks not only have to keep on the move, they have to look just so. The way we manage this seeming paradox is to make a careful inspection of the finish at the same time we are giving the trucks their weekly washing. If the finish requires touching up here and there, we shoot it into our special paint room. Sometimes all the finish needs is a rubdown with fine pumice, going easy around the decals. We make sure the surface is absolutely clean and then spray on a coat of clear synthetic. We think we have one advantage in being able to use our own dry cleaning fluid to do the rubdown. It not only dissolves every trace of wax and grease, but removes dirt and evaporates clean in an instant. If shop conditions are not the best, we can recommend the use of a tack rag to pick up all dust and lint.

BE sure your gum has a special synthetic nozzle, and set it to give a fan spray. We find it possible to get a better job by using plenty of pressure in addition. Anywhere from 60 to 80 pounds is good, according to whose synthetics you are using and how much reduction you have made. More pressure behind the gun and a little more distance from the work than you would use for lacquers give better results.

Another thing we have found that is worth remembering when the hot days arrive is to use a retarder reducer to prevent too rapid drying. You'll get a much smoother and better looking job if you do. And keep the truck out of the sun until it has had a chance to dry through.

STOP BLUSHING

By Jack Mitchell, Paint Department Foreman, Knickerbocker Ice Co., New York

ONE thing we have learned in connection with ice and coal trucks is, never try to refinish over the old finish unless it has plenty of life in it. With ice trucks we have temperature extremes, abrasion and constant moisture to contend with. It means we have to get the best possible bond with the metal or wood and use a synthetic that "can take it."

If the metal is too smooth to afford adhesion, it's best to take a bit of fine wire wool and roughen the surface just enough to give the primer something to grip to. Of course it's pretty much a cinch with wood, except that you have to make certain the wood is free from moisture. If by any chance moisture is still in the wood, blushing will result after the finish is on. Blushing is noticeable as a white veil which appears over the surface. If the sprayman will take into consideration the possible existence of dampness before spraying, he need only replace about 10 per cent of thinner with retarder in order to prevent any possibility of blushing. Of course the room itself should be dry.

WHEN it comes to applying the synthetic, we like to make our reduction about 1/3 or slightly more. If you don't get sufficient reduction there is danger of orange peel. Too much reduction will kill the gloss. So watch this part of the job. The easiest and best way to make the reduction is to add the reducer slowly and stir it in. Thus you can soon get a feel for the right amount.

We like to keep a more closed adjustment of the gun and increase the pressure behind it. The synthetic will atomize better if you do this, and if you also make certain the synthetic is up to room temperature you will save some danger from orange peel. Give yourself plenty of light too. We use floodlights, and it's a cinch to get even strokes and just enough overlap to give even coverage.

BECAUSE THEY ARE "COOLER RUNNING"

GENERAL TRUCK TIRES

give you more miles . . . AND HERE'S WHY:

Suppose you had a thick-and-thin wire like this and you bent it back and forth rapidly like this. You see what happens . . . you get an acute bend at this point and of course the wire gets very hot in this spot. That is concentrated heat . . . Now take a uniform wire that is the same thickness throughout its length like this and then bend it back and forth and you'll get a smooth curve like this and you'll see there is no acute bend at any one point. *No concentration of heat!*

IT IS THE SAME WAY WITH TRUCK TIRES . . . an ordinary breaker-strip tire with thick tread and thin side walls like this will get "hot-spots" here. That is harmful *concentrated* heat.

The GENERAL tire is UNIFORM in thickness from bead to bead like this and when it flexes on the road you get this a smooth, uniform curve without acute bends. There is less heat—and it is distributed evenly throughout the tire. There are no "hot-spots." AND THAT MEANS LONGER TIRE LIFE to you. That's why Generals give more miles at less cost than any other tire.

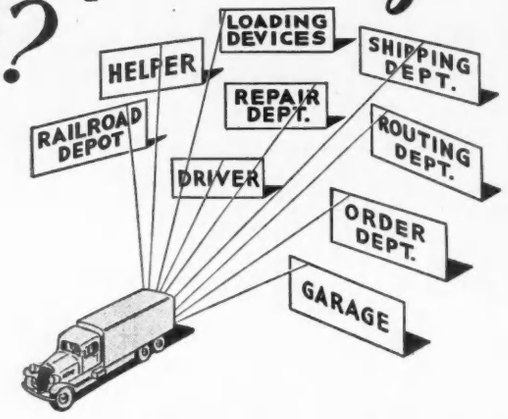
GENERAL BUILDS the most complete, most highly specialized line of truck tires in the business. GENERAL TIRE DEALERS are factory-trained truck tire experts with wide experience and accurate knowledge in fitting the right type and size of tire to every kind of job. THIS COMBINATION is worth real money to you. If your job is tough, call in the General Tire dealer and let him prove these statements.

• FREE •
this valuable booklet on how to get more service from your truck tires. Write to The General Tire & Rubber Company, Akron, O.

How Many Strings to a Truck?

or

Why Does a Truck Stand Still?



PEOPLE used to think it was the driver—when they thought at all. Now they figure differently. And they are discovering a lot of interesting things. Among them this:

Most of the idle time of a truck is due to other factors than the driver.

Perhaps they make a little change in the order department, or some trifling change in office routine, and as a result several expensive trucks increase their running time an hour a day! . . . What *starts* them doing this? . . . When they find out *when* the delays occur, and for *how long*, then they *can't help* going after the *cause*. . . . The *Servis Recorder* automatically shows up all delays on a graphic chart—like pointing a finger at them.

Today more than 100,000 *Servis Recorders* are looking after more than 100,000 trucks, and *those* trucks are keeping busy. . . . Have you investigated it yet?

THE SERVIS RECORDER
"Keeps Trucks Busy"

Write for Bulletin!—Ten Ways of Getting More Work Out of Motor Trucks

The Service Recorder Company
1422 Euclid Ave., Cleveland, O.

Status of Federal Regulation

(CONTINUED FROM PAGE 35)

mental finger-nails the situation unravels something like this:

1. The railroads favor Eastman's motor carrier bill as he wrote it originally, but they oppose his I.C.C. reorganization bill and, in fact, they oppose Mr. Eastman himself to the extent of not wanting the Coordinator Law revived when it expires on June 16.

2. Shippers, represented by the National Industrial Traffic League, are against the motor carrier bill as written and amended and have thrust their thumbs a thousand times down on the I.C.C. reorganization measure. They, too, want the Coordinator's office to expire peacefully on June 16. His usefulness, they contend, is about at an end anyway. But they are willing to agree to a teentsey-weentsey bit of truck regulation. They refer to it as a simple system of regulation where direct legislative interference with the making of rates for transportation would be entirely eliminated.

3. The Interstate Commerce Commission is back of all of Eastman's regulatory proposals in general but can't see any need for reorganizing itself to meet the new conditions.

4. The American Trucking Association, Inc., representing the trucking industry, favors the entire program proposed by Mr. Eastman. (This is a tribute which must give Mr. Eastman a great degree of satisfaction because a year ago he was nothing but an Interstate Commerce Commissioner and as such shared the vituperation that trucking operators are wont to hurl at the Commission. In that one year he made the industry believe in him and his motives.) But the A. T. A. insists upon certain amendments to the motor carrier bill and also makes acceptance of any motor carrier regulation contingent upon reorganization of the I.C.C., continuation of the Trucking Code principle, and transfer of the Code to the Coordinator for administration.

BUT there are two other "buts." The A.T.A. position, which has been made known to every Senator and Representative via correspondence from A.T.A. headquarters, does not have the *sincere* support of all operators who would be subject to regulation. This applies to that minority of operators who have been violently and unswervingly pro-regulation for a long time. This group's approval of the A.T.A. position, it is admitted, will continue only up to a certain point. These operators want regulation so urgently that if A.T.A.'s insistence upon I.C.C. reorganization and continuation of the code under the Coordinator should jeopardize the truck regulatory bill, they will step out of the ranks and line up for regulation without reservations.

Also there are the cartage men who, at this crucial moment, have decided to tip the regulation applecart. Take the group known as the Merchant Truckmen's Bureau of New York. Frequently in the past the Bureau publicly opposed federal regulation. Privately, however, the sentiment of its members was pro-regulation. They were willing to see interstate operators regulated but feared that regulation would prevent free passage of their trucks between New York and New Jersey. Now not only does the Eastman Bill substantiate this fear but the Bureau has uncovered evidence of the unfriendliness of railroads. This evidence has been submitted to the Senate, House and Interstate Commerce Commission showing that railroads are engaging in the most ruthless form of cut-throat competition. So, realizing that their salvation depends upon their ability to extend the scope of their operations in competition with the railroads they oppose any legislation designed to limit such competition, and ask the defeat of Eastman's Motor Carrier Bill.

To the opinions against any kind of truck regulation add the weighty opposition of farmers, and if you can foretell the outcome you're a better man than Gunga Din.

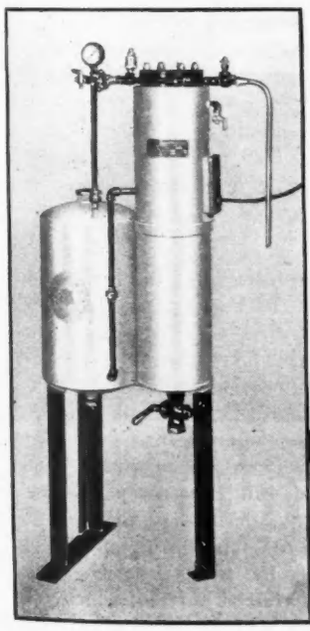
TRAIL·BLAZERS!

CROSSING the continent from sunrise to sunset, carrying precious human cargoes in safety—didn't just happen. While transcontinental and Pan-American airplane travel is spectacular—it has only been made practical by painstaking attention to details. No needless waste or traditional prejudice, hampers here. Practices which were "good enough for father or grandfather" just don't exist, for neither grandfather nor father ever ran a business like this.

Trail-blazers of air travel, they were also among the first to recognize the advantages of purifying crankcase drainings. Skinner Oil Purifiers perform their duty faithfully for airplanes flying almost every where on the Western Hemisphere.

Oil Purifying equipment pioneered by Skinner since 1927, like commercial aviation, in the last eight years, has made great strides, until now 94 to 98% of used oil may be renewed at 1½ to 4c per gallon.

Fill in the coupon and we will tell you what the Skinner Oil Purifier will mean to you in savings—to airplane transportation's unfailing confidence, it has paid rich dividends.



Skinner Stream-Line Filters come in a complete range of sizes, adaptable to any volume of operation—Some of them cost no more than a new typewriter.

SKINNER OIL PURIFIERS

MAIL THIS COUPON

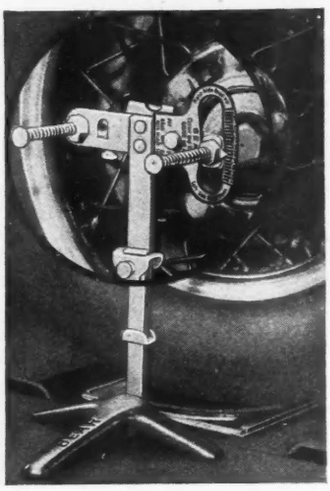
SKINNER PURIFIERS Inc., 2226 Dalzelle, Detroit

We want complete information on Skinner Oil Purifying. Our new oil purchases monthly are_____gal. at a cost of_____per gal. Our electrical current is_____per kilowat hour.

*Name*_____ *Address*_____

If you will give us the above information, we can make you a specific recommendation, without delay.

Check Your Wheels with BEAR MASTER ALINEMENT GAUGES



The Master Caster & King Pin Gauge No. 40 (above)

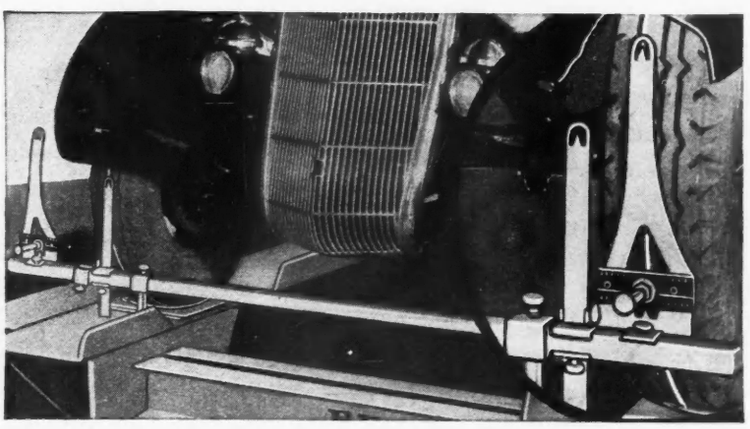
The key to wheel and steering alinement. Checks BOTH caster and king pin angles—easily and accurately. Locates bent axles, king pins and knees—shimmy, tramp, hard steering and tire wear. Adjustable to all cars, trucks and buses. Readings in fractions of degrees on easy-to-read dial.

Save money on rubber. Misalinement is the demon that eats away tires. Give your drivers the confidence and ease of handling that result from properly alined wheels. Then, too, correctly alined wheels decrease the accident hazard.

Bear Master Gauges are the standard of alinement practice in the country's leading shops. Order from your jobber or write direct to us. Bear Manufacturing Co., Rock Island, Ill.

The Master Camber & Toe-in Gauge No. 25 (below)

The only gauge that checks BOTH camber and toe-in from center line to center line on both wheels at the same time. Accurate—fast—easy checking dials graduated in degrees and inches—true as a die. Fits all cars, trucks and buses.



BEAR SERVICE DOES THE JOB RIGHT!

New Homes Come Packed in Trucks

[CONTINUED FROM PAGE 23]

of the Board. Two years later a group of industrialists, envisioning a great market for the home of the future, formed Houses, Inc., as a parent company and became related to American Houses, Inc., as a subsidiary.

THE backers of Houses, Inc., the affiliated company, are unknown, but there may be some significance in the fact that Foster Gunnison, the president, attended St. Lawrence University on whose board of trustees sits Owen D. Young and Clarence M. Woolley.

Assuming that you are all set to acquire one of these modern, efficient Motohomes, the procedure of acquisition would be as follows: You buy a lot—or maybe you already have one. You communicate with American Houses, Inc., whose offices are in New York City. They send you 12 house-plans, ranging in size from three rooms, kitchen and bath to nine rooms, kitchen and three baths. After selecting your house and floor plan you are presented with a miniature model of the house, toy trees, make-believe grass, gravel, etc. It is not for the children. You take the model, and move the objects around until you have achieved an agreeable layout of house and landscape. Your new home will be an exact replica of whatever layout you arrive at.

Now that you have selected your home, you sign the contract. Shortly thereafter a truck backs up to a warehouse where sections of the homes are stored and loads up with one complete American Motohome. Delivery is made at once, if you wish it, and the house is completely erected in two to three weeks. Upon its completion a benevolent food manufacturer walks in and equips the kitchen cabinet with enough food to last the family three days. Other immediate supplies include soap, a mop, toilet paper, a set of books on interior decorating, gardening and planting, cooking, etiquette, the care of your baby, budgets and a philosophical treatise on "Getting the Most Out of Life in This House." Each book is written by an authority on the subject. You may now move in though you haven't paid a cent!

How will you finance this house? You make no down-payment, take out no first or second mortgage. You begin paying after moving in and in 15 years the house is yours. While the final financing plans are not yet definite, the tentative price on a four-room home, completely equipped except for furniture, will probably be $3,800. (Remember you buy the lot and provide the water, sewerage and light sources yourself). Larger homes of nine rooms, two stories high, will be priced at about $9,900. Bought on the installment plan, the smaller house will cost $38 monthly for 15 years. The payments on the larger house are $99 monthly for 15 years. Installments include fire and life insurance so that if you should die, your family would have the house free and clear with no further payments to make. All these features, including interest and payments on principal, amount to $6,800 in the case of the small house and $17,800 in the case of the large home.

What do you get for your money? You get an attractive, durable, fire proof, termite proof, water proof, sound proof home built to withstand a wind velocity of 120 miles an hour, earthquakes, and snow storms in which snow may be heaped on the roof.

THE construction of the house is interesting. It has no basement, although a cellar will be dug at extra cost. Excavation extends 3 ft. deep and the foundation wall extends below the frost line. A 16-in. air space extends below the entire first floor where warm air is circulated in winter. Walls are of the 4-ft. Pyrestos panels and, consequently, the size of the house is a multiple of four. Aluminum alloy strips cover the seams between panels on the exterior. The roof, which con-

[TURN TO PAGE 89, PLEASE]

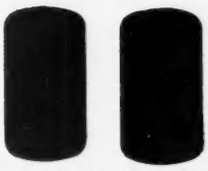
TO GET PLACES

this fire fighter uses the higher flotation provided by the

HIPKINS TRACTIONEER

Illustrated is a "Triple Combination" (pump, booster tank and ladder truck) built by Hahn Motors, Inc., Hamburg, Pa., equipped with The Hipkins Tractioneer.

These impressions show the ground contact area of two tires of one of the dual rear wheels of a loaded truck.



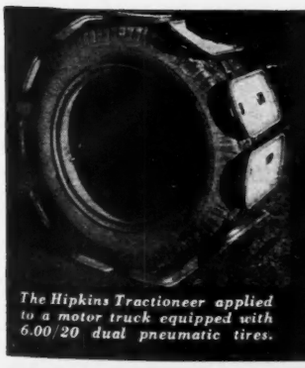
These impressions show the much greater ground contact area—which means flotation and buoyancy—when The Hipkins Tractioneer is applied.

Aided by the higher flotation and traction which The Hipkins Tractioneer provides, this fire-fighter can roll off the road . . . over cross-country . . . through soft and muddy footing, to combat brush and forest fires.

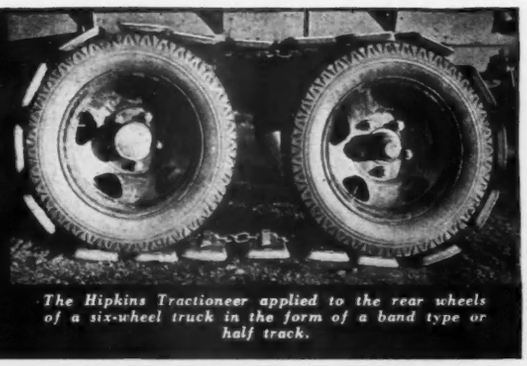
Higher flotation results from the success with which The Hipkins Tractioneer distributes the load (ordinarily concentrated on the tires) over a much larger area . . . an area as great as the size of The Hipkins Tractioneer shoes. This distribution of the load naturally effects a considerable reduction of ground pressure per square inch.

Less dramatic than the success of the fire engine, but more important to you, is the assurance of continuous, day-to-day operation of the trucks you operate or sell . . . the ability to work under any conditions of weather or road.

To find out what a higher degree of flotation and greater traction will do for you, send the coupon for additional information . . . Tractioneer, Inc., National Distributors, 11th and Hamilton Streets, Philadelphia, Pennsylvania.



The Hipkins Tractioneer applied to a motor truck equipped with 6.00/20 dual pneumatic tires.



The Hipkins Tractioneer applied to the rear wheels of a six-wheel truck in the form of a band type or half track.

The HIPKINS TRACTIONEER

the portable roadbed that carries you through

Manufactured by **BY-PRODUCTS STEEL CORPORATION, COATESVILLE, PA.**

Send for (NEW EDITION) *This Booklet*

TRACTIONEER, INC.,
11th and Hamilton Sts.,
Philadelphia, Pa.

Send a copy of your booklet on The Hipkins Tractioneer. We are ☐ fleet owners ☐ dealers ☐ truck manufacturers.

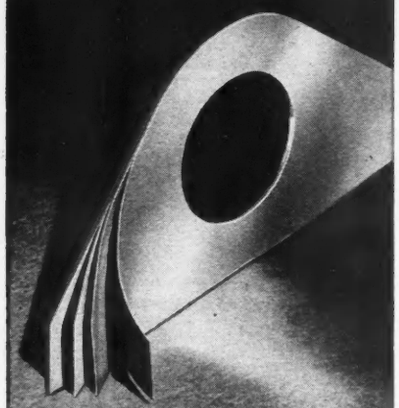
Name and Title .....

Company .....

Address .....

City and State 5-35

P-e-e-l yourself more profit in bearing adjustment!



SIMPLY P-E-E-L .002" or more at a time. No miking . . . No filing!

Modern bearings require modern precision standards. Laminum, the solid shim that p-e-e-l-s for adjustment, makes precision adjustments profitable! Standard in leading gasoline, diesel, oil and gas engines.

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MFRS.: LONG ISLAND CITY, N. Y.

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543

Just Out . . .
FREE CATALOG OF TIME SAVING TOOLS
. . SEND FOR IT TODAY

National
MACHINE & TOOL CO.
JACKSON, MICHIGAN U.S.A.

The Evil Effect of Evil Regulation

(CONTINUED FROM PAGE 33)

County, that I first learned how poor intrastate transportation affects such communities. Townville has 270 inhabitants and is the focal point of a dairy-farming section containing several hundreds more. It is eight miles to the nearest bus route (Titusville to Meadville), 10 miles to the nearest railroad agency at Centerville, and seven miles to Trionville, where there has not been an agent since the war. There is a fine concrete highway through Townville, connecting it with arterial highways.

THE hardware store of Mason & Reide is the cross-roads of this small town. It was here I talked with Mr. Mason and a number of his customers about transportation and their businesses. For the most part they were farmers. Until the fall of 1933 Townville usually ordered its requirements from Erie and Pittsburgh. The mailman, after securing his mail at Titusville, would drive his truck on to Centerville, there to dispatch and collect shipments of Townville citizens and merchants. Unthinkingly Postmaster General Farley re-arranged mail deliveries for Crawford County in the latter part of 1933, and in the reshuffle Townville lost its mail truck connection with Centerville Station. It was just at this time, as last month's article indicated, that the interstate for-hire truckers began to expand their services in Western Pennsylvania, and this new Aladdin's carpet brought new benefits within the ken of the uncomplaining citizens of Townville, for which they still feel surprising gratitude.

Buffalo and Cleveland became almost next-door neighbors. The rest of the story is not hard to guess. Mr. Mason estimates that he personally benefits by savings exceeding $700 each year. The savings in drayage from Centerville, for which the mailman charged 25 cents per hundred pounds, alone total more than $350. The stringent packing and crating requirements of the railroads, now no longer necessary that everything is trucked from Cleveland and Buffalo, account for a considerable sum. The greatest gain of all, according to Mr. Mason, is not measurable in exact dollars and cents, for it is the facility with which orders are now handled. No longer is it necessary to wait an average time of two weeks to secure an order from Pittsburgh. An order mailed to Cleveland or Buffalo is de-

Increase Shipping Floor Capacity
Make Extra Trips With Trucks You Have Now
BY USING
"ROLOFF DEMOUNTABLE BODIES
ASK US HOW
ROLOFF, INC.
KENDALL SQUARE
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REDUCE UPKEEP

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Use Tin-Plated Pistons to cut *your* maintenance costs. That is why they are original equipment on Chevrolet, Buick, Pontiac, Oldsmobile, Studebaker, Mack, White and GMC—and being seriously considered by others. Test them yourself, or write us for complete details.

CIRCO PRODUCTS CO., Cleveland, O.

FOR BETTER PERFORMANCE
always replace worn spark plugs with
Defiance
SPARK PLUGS
Engineered for Replacement
DEFIANCE SPARK PLUGS, INC.
Toledo, Ohio
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Gardiner METAL CO.
30/70 BODY SOLDER
is available in
HANDY 5 LB. PACKAGES
Sturdy, compact boxes, containing convenient 14 inch lengths of either meter bar or quarter inch round.
Years of experience in supplying large automotive and body manufacturers are a guarantee of Gardiner quality.
For tinning surfaces to be filled use Gardiner Acid-Core Solder.
Ask for it by name—your jobber can supply you.
GARDINER METAL CO.
4832 So. Campbell Ave., Chicago, Ill.
Also babbitts and bar, wire and flux-filled solders.

ONLY
B.&J. TRAILERS
HAVE GRAVITY SPRING SUSPENSION
Every Demonstration Becomes a Sale
Write for bulletin
B. & J. TRAILER CO.
3915 S. Michigan Ave. Chicago

livered within four days from time of mailing.

Well, from Pennsylvania's point of view, that fine highway which has made near neighbors of Buffalo and Townville is proving a sad loss. Pittsburgh and Erie are still two weeks away by less-carload rail service, and the buying power of several hundreds of people has been diverted from its old channels.

Had common carrier trucking, which serves the little man in the little town so well, received encouragement to develop to the stature commensurate with the needs of the rural areas it is doubtful if this buying power could have been diverted from Pennsylvania supply houses. These are conservative customers, fortified in their conservatism by long years of friendly business relations with Pennsylvania wholesalers.

There are many places which lack railway and truck service to other parts of Pennsylvania, and the story of Townville is duplicated in Sheakleyville, Pleasantville, and a number of such places. They house from a few score to a couple of thousand inhabitants, and it should not be forgotten that to these must be added much of the buying power of the farms surrounding them, most of which is being drained from Pennsylvania, because it lacks adequate highway common carrier service.

Leaving the one-horse towns, I tarried awhile in the one-train towns. There are plenty of them in Western Pennsylvania. I think two of them will be enough to illustrate what happens when a railway's monopoly is preserved. Fredonia, Mercer County, and Conneaut Lake, Crawford County, will serve the purpose. Both have a population of nearly 500. Both are served by the Bessemer & Lake Erie Railroad.

FREDONIA is purely agricultural in character. Searching for information on local transportation I first contacted Mr. Robbins, Fredonia storekeeper, and learned that because of the difference between the truck service from Cleveland, 120 miles away, and the rail facilities from Pittsburgh, 65 miles away, he bought almost all that he required from Cleveland. Less-carload traffic to Pittsburgh requires three or four days, and there is no alternative. Further, because the B. & L. E. does not give store-door service anywhere on its system it is necessary to arrange cartage from the depot. Cleveland orders come through by truck, overnight if necessary, and are delivered right into his store.

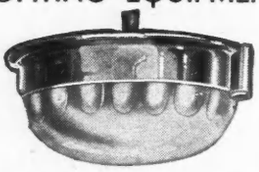
Conneaut Lake is a pleasant holiday resort in the extreme west of the State. Its resident population is increased by some 5000 summer visitors, who reside in the cottages along the lake shore or at the hotel. The great fluctuation in population accentuates the transportation problems of Conneaut Lake, but the Bessemer & Lake Erie Railroad apparently is unaware of this.

SUMMER visitors, I learned from Mr. Ralston, who sells refrigerators, electrical equipment, radios and so forth, have money to spend, but demand prompt service. A vacation is too brief to permit of lengthy delays while something necessary for the amenities of the cottage is procured. Whether it is a refrigerator or a coat of paint, a new rug, or a camp bed, it is wanted right away. Speaking of refrigerators, Mr. Ralston said that it is impossible to carry more than a representative selection of the vast varieties of sizes, types and models. On one occasion last year Mr. Ralston drove his own truck 90 miles the round trip to Erie, to secure a particular model for a visitor who required next day delivery. Failure to do this would have lost the sale. The experience of years had taught Mr. Ralston not to rely on the railway, which would require at least three days, and this would be much better than average time, I am told.

Here, as everywhere in Western Pennsylvania, more and more of the community's requirements are being

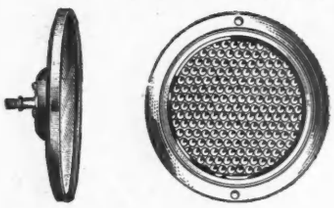
LOW PRICED? Sure!
You can afford to buy these jacks
You will save time and money by completely equipping your fleet with these new Hein-Werner Hydraulic Jacks.
Why try to get along with old, broken, obsolete jacks when you can have the best equipment made—especially when the prices are so low.
Think of it—a 12-ton capacity hydraulic jack for only $19.95. Yes—and 7-ton models at $13.45, 5-ton jacks at $9.95, 3-ton capacity at $7.95 and 3,000 lb. "Bullet" Model at only $2.99. (These prices are net to the dealer, and are slightly higher west of Denver.)
Order through your jobber — or write us.
HEIN-WERNER MOTOR PARTS CORP.
WAUKESHA, WISCONSIN
FEW MODELS ENGINEERED TO DO THE WORK OF MANY
HEIN-WERNER
hydraulic JACKS

NORTON and ROYAL
LIGHTING EQUIPMENT



MARKER, WARNING, DOME
and CORNER LAMPS

MIRRORS and REFLECTORS



Fleet operators, dealers, jobbers and manufacturers write for complete catalog.

MONROE-ACME CO.
2106-08-10 S. Kedzie Ave. Chicago

New Use For Trailers

Georgia Firm* Eliminates Salesmen's Cars

DELIVERIES are handled by a tractor-truck and Fruehauf Semi-Trailer—three times more tonnage per trip than the truck alone could haul. But that's common. This isn't: the tractor-trailer has eliminated a salesman's car! The salesman travels with the delivery unit. Selling, collecting, adjusting, and delivering are combined in one operation. Costs were cut amazingly.

That's a sample of the extra benefits often uncovered by a Fruehauf Transportation Survey. Without cost or obligation, you find out definitely what Fruehauf Trailers can do for you.

***DO THIS* . . Ask for complete details to be sent by mail—or, better yet, tell us to survey your set-up without further delay.**

* Name on request

FRUEHAUF TRAILER CO.
10957 Harper Avenue Detroit
Sales and Service in All Principal Cities

WORLD-WIDE
ACCEPTANCE

MARMON-HERRINGTON all-wheel-drive trucks and truck-tractors are in use the world over. They are giving a remarkable degree of service, no matter what the conditions under which they are called upon to operate. More and more Marmon-Herringtons are being purchased each year, not only abroad but in the United States. There could be no greater tribute to the performance, stamina and value of the finest all-wheel-drive vehicle ever developed. Marmon-Herrington Company, Inc., Indianapolis, Ind., U. S. A.

MARMON-HERRINGTON
ALL-WHEEL DRIVE

met by sources outside the State of Pennsylvania because of the advantage of truck transportation, and door-to-door delivery available elsewhere.

The difficulty in fulfilling emergency orders does not arise from inadequate inventories on the merchants' shelves. To a business man's eye most of them seem to err on the side of generosity, when the potential markets are taken into consideration. Possibly this a "hang-over" from that comparatively recent time when the interstate truck was less ubiquitous, and these small communities were dependent almost entirely on the railroads. The furtive efforts at intrastate trucking without Public Service Commission blessing have always been driven from the highways before doing much good, and from the viewpoint of these communities it is fortunate that the Commission has no jurisdiction over such operations conducted interstate.

That the limited stock carried is not usually the reason for emergency orders is borne out by Mr. Barton, publisher of the "Conneaut Lake Breeze." In addition to his newspaper, Mr. Barton does all the printing required for miles around, and carries the largest stock of paper and printer's supplies to be found in a small town in Western Pennsylvania. Yet, Mr. Barton says, it is frequently necessary to call Cleveland for special stock required to meet some visitor's order. By doing this it is possible for Mr. Barton to give his visitor 5,000 copies on pink paper next afternoon, if such is the order.

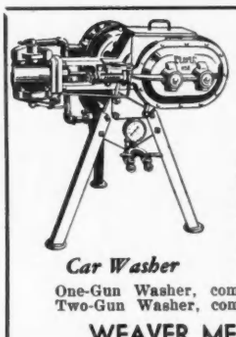
STRANGELY enough much of the paper used by Mr. Barton and numerous other printers of the western part of the State is produced by the Hammermill Paper Company, of Erie, but it is usually ordered from Cleveland or Buffalo because it saves time.

Mr. Payne, President of the Daka Paper Co., Erie wholesaler of Hammermill products, gave me several striking examples of this kind. It seems the rule rather than the exception to truck Hammermill paper to Cleveland or Buffalo and then carry it back again to Pennsylvania and put it down on Erie's back door-step. It serves to emphasize the fact that branch offices and warehouses in other states are gaining at the expense of Pennsylvania establishments, a matter I dealt with previously.

Trade-in Prices OK'd in Dealer Code

The proposed amendment to the Motor Vehicle Retailing Code fixing top allowances on used cars at 15 per cent less than the prevailing fair sale values of better grade motor vehicles has been approved by the National Industrial Recovery Board. A hearing on the amendment was held at Washington, March 7.

Stoughton Trailers
Every size Every kind
The only Trailer using the
FULLY RUBBER CUSHIONED
FIFTH WHEEL
Write for prices and literature
The New Stoughton Company
Stoughton, Wisconsin



Car Washer

WEAVER
CAR
WASHER

Sprays 6 gallons of atomized water per gun per minute. . . 300 to 350 lbs. pressure. Requires less water per car. . . . Has enclosed drive.

One-Gun Washer, complete $325.00
Two-Gun Washer, complete $425.00

WEAVER MFG. CO.
Springfield, Illinois

HERCULES POWER

Hercules engines, both gasoline and Diesel, have long been standard equipment on many leading makes of trucks, truck tractors and delivery units as well as urban and interurban buses, road building and maintenance equipment, industrial, oil field and agricultural machinery. Hercules provides an engineering service which includes a study of specialized power applications.

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America's Foremost Engine Manufacturer
Power Plants from 4 to 200 HP.

DITZLER

AUTOMOTIVE FINISHES
PYROXYLIN LACQUERS
SYNTHETIC ENAMELS
Standard in the automotive industry since 1902
DITZLER COLOR COMPANY
DETROIT MICHIGAN

PUBLISHER'S STATEMENT OF CIRCULATION

This is to certify that the average circulation per issue of COMMERCIAL CAR JOURNAL for the six months' period July 1st to and including December 31, 1934, was as follows: Total, 22,741*. (Signed) Jos. S. Hildreth, V-P. Subscribed to and sworn before me on this 11th day of March, 1935. Joseph W. Fritz, Notary Public. My commission expires Feb. 19, 1939.

*Policy changed in October, 1934. Circulation thereafter 30,000 monthly.

New Homes Come Packed in Trucks

(CONTINUED FROM PAGE 56)

sists of a mineral compound 2 in. thick reinforced with steel, may be used as a sun deck. A second story may be added at any time. Exterior painting is unnecessary.

Interior flooring is made of hardwood, the fibers of which have been exploded under pressure and then compressed into sheets. It is of a dark mahogany color. The fact that the house is air conditioned and that the ceilings are acoustically constructed eliminates any concern over the ceilings being only 8 ft. high. Windows are set in corners along two walls providing two exposures and conserving wall space. They are of a patented steel construction and operate automatically by a small crank and lock. Each window comes equipped with curtain rods and hinged screens. In northern climes storm windows may be used where screens ordinarily go.

Perhaps the most important and unusual feature of the new Motohome is the moto-unit (the thing which makes the house go). This is a mechanical core which contains all of the plumbing, heating, electrical and mechanical devices for the house. The panel comes complete in a metal cabinet around which the house is built. One side of the panel faces the kitchen and contains complete kitchen equipment such as a refrigerator, sink, range, cabinets, heating unit and the air conditioner.

THE heating and air conditioning units are quite exceptional. Four types of heating units are available: coal, oil, gas and electric. You should select the type most economical in your community. The air conditioning equipment washes and refrigerates the air in summer and humidifies warm air in winter and keeps the house free from smoke and dust. An even temperature may be maintained all the year round, which feature may become painful for both summer and winter resort operators. If you wear shoes with "bulldog" tips while working in the kitchen, you can't scratch the leather because of a slight recess in the floor just below the sink where you may rest your toes.

The reverse side of the moto-unit forms the bathroom. It features modern indirect lighting (as does the rest of the house) triple adjustable mirrors, a patented wash basin large enough to bathe a baby in without bending over. Beneath the lavatory is an auxiliary electric heater which blows warm air in the room on chilly mornings. Both kitchen and bath have built-in electric clocks. The toilet is a new invention. It hangs from the wall so that the floor underneath may be kept clean easily. It is placed lower than the average toilet. This brings the knees up as an important aid to constipation, it is explained. A new patented toilet seat registers the weight of the sitter. The bath-tub is recessed so that you won't fall in while leaning over. You may sing all you want while taking a bath as the walls are sound proof.

The small house consists of a living room 12 x 16 ft. with a built-in radio and clock and a floor lamp which may be used for direct or indirect lighting, two bedrooms, kitchen, bath and three electrically lighted closets. The homes are increased in size simply by "unbuttoning" a wall and adding another bedroom, dining room, store room, etc. A garage is included in the sale of a large house. You may have a garage at extra cost with a small home.

The company will not make individual changes in any of its floor plans, should you have some ideas of your own, as it believes that their expert architects know what's good for the average family better than the family itself. And while each home is virtually a machine in which to live, none of the charm to be found in the best homes is missing.

According to company plans, prefabricated parts of the homes will be shipped to about 500 distribution centers yet to be established. From those

Keep that
NEW TRUCK NEW!

When that new truck goes on your job, be sure that it starts right—*with a Handy Governor under the hood.*

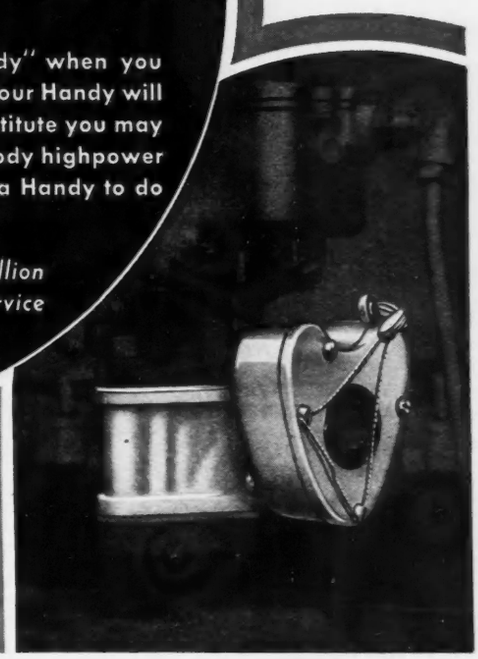
Nothing so good as a Handy to keep a new truck acting new!

No overspeeding of the motor, in gear or idling—less need for quick stops, therefore no undue wear on brakes or tires—far less risk of major accident—far longer life of bearings, piston fits and all moving parts.

But be sure to say "Handy" when you say "Governor". Insist! Your Handy will cost no more than the substitute you may be asked to buy. Let nobody highpower you. Remember, it takes a Handy to do a Handy job.

More than a million in successful service

PROTECTION HANDY ECONOMY



HANDY GOVERNOR CORPORATION, DETROIT

HANDY GOVERNOR

depots Motohomes will be shipped by truck to your lot and assembled. Each depot will serve a zone approximately 300 miles in radius.

Motohome "trial horses" built about three years ago in Pennsylvania, Connecticut and New York (11 of them) have proved their merit and laboratory claims. And now the company is ready to go full blast. That the country is alert to the possibilities of the Motohome is evidenced by the fact that numerous architectural and home magazines are daily turning over to the company hundreds of inquiries received from interested persons. Most inquiries have been coming from the Middle Atlantic, New England and Southern States. The latest was a telegram from California ordering a home for immediate delivery.

With the completion of the newly designed trucks (any day now) you may look forward to delivery of this modern home within 24 hours' notice.

Servicing a Scattered Fleet

(CONTINUED FROM PAGE 19)

Only tires, batteries and chains are kept in a separate department outside of the stockroom.

So far we have passed up the stockroom men who have a busy day every day. Two men are on duty through the course of the normal working day and the rest of the 24 hours is divided among two other men so that the fleet has continuous stockroom service. Brake lining is installed on the shoes and spark plugs are cleaned and spaced by the stockman. By the way, all stations send in their brake shoes to the main shop on an exchange plan when they require new lining. Spark plugs are now being sent out in lots of 100 for rebuilding but this has not been going on long enough for Mr. McLaughlin to have formed any definite ideas as to the economy of this plan over self-service in the stockroom.

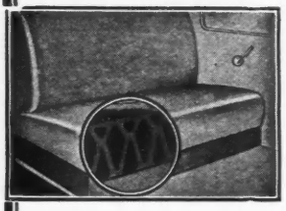
There is one young man in the office who interests us. He posts daily the odometer reading and the oil and gas used by each vehicle. He sits before a ledger which tells him, among other things, when the oil was last changed in every truck that United Parcel Service operates. When the last change gets to be 1000 miles away he sends a card to the station mechanic to change it again if the particular truck is not using much oil. If the truck is using a fair amount of oil he may stretch the change point up to 1500 or 2000 miles to compensate for the fact that several quarts of fresh oil have been added to the crankcase lubricant since the last change. The mileage between changes depends, of course, upon the consumption.

WHEN the oil is changed the station mechanic sends the card back to the man at the ledger and in that way the mechanic is relieved of keeping the record. The index man enters the oil change when, and only when, the card is returned to him.

Oil is reclaimed by a firm that makes a business of handling fleet reclamation. A card dropped in the mail to this company will bring one of their trucks to whatever station has its storage tanks full of crankcase drainage. The oil is taken to the refinery and after processing it is delivered to whatever station the United Parcel Service designates, with a slip giving the specifications of the reclaimed oil.

As long as we are on the subject of paper work we cannot pass up the chart in Mr. Bixby's office. The chart lists the cars in groups by make and mileage and reading from left to right you can find out how much per mile and per day it costs to operate the cars in any individual group. The amount of money that goes for fuel, oil, tires, chassis, engine and body repairs is given for each group.

WORN OUT SEAT CUSHIONS— A THING OF THE PAST



You, too, can eliminate the needless expense of replacing and repairing wornout back and seat cushions by equipping your trucks exclusively with BLACK DIAMOND cushions. Made with the famous diamond grid feature in order to insure durability, comfort and long life. Nothing to break—nothing to replace. Scientifically constructed of semi-sponge rubber. Used by fleet owners everywhere for economy. Write for complete facts and prices.

KARPEX MANUFACTURING COMPANY
INDIANAPOLIS, IND.

HANDY HOIST

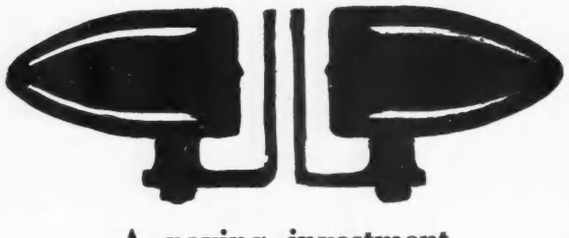
FIVE-TON

A hand hoist for trucks, trailers, wrecking cars, etc. Also suitable for structural erection, handling boilers, safes, machinery and other hoisting, hauling, loading and lifting. All steel construction. Has two-speeds, geared 4 1/3 to 1 and 23 to 1 with positive internal brake. Compactly built, 16" x 20" x 13". Weight only 125 lbs.

$75
F.O.B. FACTORY

ALLOY STEEL & METALS CO.
1862 E. 55th St.,
LOS ANGELES, CALIF.

POWER—SPEED—STRENGTH



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Watch for this trademark.

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CORPORATION

400 E. Rittenhouse St. (Germantown), Phila., Pa.

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We are holding for you a copy of our new 48-page illustrated "AUTOMOTIVE CLEANING HANDBOOK." It contains the answer to all your questions — asked and unasked—about modern cleaning methods in automotive work.

Simply clip this ad to your business letterhead. Mail to us, and a copy of this free book will be sent to you gladly.

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Advanced Design
STEEL BODIES

More Drill for the Money

Air-cooled Steel Bodies that "can take it"—that stand up under knocking around. Lighter, stronger, handier tools with 12 superior design and construction features. Size for size: more power, more holes, more drill, still cost 20% less. These are new things in drills that you should know about.

WRITE FOR CATALOG

SpeedWay Manufacturing Co.
1826 So. 52nd Ave., Cicero, Ill

SHELL Petroleum did - - - -

Nearly three years ago they started cutting tire costs with Kwick-Kut. Since then they have put 30 Kwick-Kuts into service.

Kwick-Kut will cut YOUR tire costs. Let us prove it without obligation to you. Write.

KWICK-KUT MFG. CO., Inc. 3840 Arsenal St. St. Louis, Mo.

STOP THAT WASTE! from IDLING MOTORS!

MOTO-KOP *stops* the motor when the truck is idle. Positive, Tamper-proof. Pays for itself in 3 months in reduced gas and maintenance costs.

The MOTO-KOP
Automatic Ignition Control

PATENT PENDING

ROBIE AUTOMOTIVE ENGINEERING CORP.
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A Tight Connection All the Time

TRADEMARK
NOC-OUT
THE HOSE CLAMP
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Standard equipment hose clamp of the automotive and airplane industry
Your jobber has them

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VALVES, PISTONS
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SILENT "U" SHACKLES
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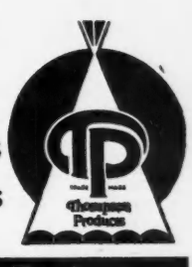

Thompson Products

Reo Gets $1,500,000 U. S. Truck Order

Government contracts for speedwagons and truck equipment amounting to $1,500,000 have been awarded to the Reo Motor Car Co.

Production on thousands of trucks for the Department of the Interior and the Department of Agriculture was started as soon as contracts were signed. The order is the largest in Reo's history.

Most of the jobs will be equipped with dump and stake bodies.

Dodge Sales Climbing

Dodge dealers report retail deliveries of 1302 commercial cars and trucks for the week ending April 13. This brings the total for the first 15 weeks of the year to 13,978 units.

Contracts have been let and work will begin soon on an addition to the Dodge truck plant in Detroit, according to J. O'Neil, general manager. The addition will cost $250,000 and will make expansion of all departments possible with greatest benefits to truck chassis and final assembly line.

National M & T Enlarges Plant

The National Machine and Tool Co., Jackson, Mich., have enlarged their plant and installed a forging machine designed for the manufacture of replacement axle and drive shafts.

Chevrolet Opens New Plant

Capacity operation of Chevrolet plants throughout the second quarter of the current year was forecast by M. E. Coyle, president and general manager, at the impressive ceremonies which marked the opening of Chevrolet's new assembly plant at Baltimore last month.

Studebaker Baptises 4 Models

Each of the four chassis models in Studebaker's new line of trucks is to bear a distinctive name.

The Ace is the designation chosen for the 1½-ton chassis, 11,000 lb. gross, new low price of $565. The 2-ton chassis, gross rating 13,500 lb., will be known as The Boss. The 2½-ton unit, 16,000 lb. gross, will carry the title of The Mogul. The 3 to 4 ton unit, 18,200 lb. gross, with its 358 cu. in. displacement engine, will be named The Big Chief.

NEW TRAILERS

EVERYBODY knows Coca-Cola. They and their Distributors get business. They handle it at rock-bottom cost.

And Coca-Cola is delivered on Fruehauf Trailers! Illustrated here is one of ten new units for the Chicago area.

What is your product? Have you found out how much cheaper Fruehauf Trailers will deliver it?

YOU CAN . . .

"Tell us about your survey plan,"—six words from you to us will start things moving. You pay nothing. You do not obligate yourself. You just find out what low-cost haulage really is. Today is a good time to do it.

Oldest and Largest Manufacturers of Trailers

FRUEHAUF TRAILER CO
10957 Harper Avenue Detroit
Sales and Service in All Principal Cities

Operators Attend NCA Meet

The National Code Authority for the trucking industry was welcomed by more than 150 truck operators, leaders of the industry in the Southeast, when they held their first regional meeting at Atlanta, Ga., last month. Leaders from 10 southern states "sat-in" at the mass meeting and heard discussions on problems confronting the industry, chiefly those related to the code and Federal regulation. Principal speakers were Ted V. Rodgers, NCA Chairman; H. D. Horton, NCA member for Region No. 4, and Judge Edgar Watkins, Atlanta transportation attorney.

This general meeting was followed by an all-day meeting of the Code Authority at which visiting state code authority members and secretaries were observers. After business routine was completed, the meeting was thrown open to general discussion.

Sterling MOTOR TRUCKS
DIESEL
GO TWICE AS FAR ON FUEL THAT COSTS HALF AS MUCH

Let us put a Diesel in your truck and prove our claims!

STERLING MOTOR TRUCK CO., INC.
Milwaukee, Wis.

NOW in a single ring The OIL SEALING ACTION of 3 to 6 expander rings- with a metal that PROTECTS and LENGTHENS motor life!

3
SEPARATE SEALING AND WIPING EDGES OF BEARING METAL
OIL CUSHION
EXPANDER
PISTON
3/16
GROOVE
RING GROOVE SEALED BY HYDRAULIC PRESSURE
6 SEPARATE SEALING AND WIPING EDGES of BEARING METAL
—ALL WITH EXPANDER ACTION TO MOLD THEM TO CYLINDER WALL!

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Oil loss in leaky, oil-pumping motors is only HALF the loss. Ordinary piston rings not only wear themselves out quickly, but the cylinder walls they ride against as well.

MOLIUM metal—an exclusive SIMPLEX development—for the first time makes it possible to stop BOTH losses. Simplex MOLIUM piston rings not only put a positive stop to oil pumping, but because they are made of anti-friction, long-life BEARING METAL, prolong the life of costly truck equipment, too. MOLIUM radically reduces cylinder wear and friction, even though the flexible face and expander action of the ring give a tighter, more efficient oil seal than any principle of piston ring design yet known.

Let MOLIUM help you bring down operating costs and show you savings on cylinder resizing too. Phone your distributor for prices or use the coupon below!

NOTE THESE LOW PRICES

Ford, Chevrolet and Plymouth sets

4-Cyl.	$3.95
6-Cyl.	5.95
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—and don't forget SIMPLEX PISTON RESIZERS for either

Cast iron or aluminum pistons. Makes pistons ADJUSTABLE to Correct Clearance.

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